

dignified and stern expression typical of a Qin Dynasty soldier. He wears traditional, detailed Qin military armor, intricately designed with square-patterned armor plates and tied with thick, decorative cords across the chest. His hairstyle features a distinctive topknot, emblematic of the period, positioned on top of his head. The facial features should be strong and well-defined, with a full beard and mustache, reflecting the noble warrior status. His hands are clasped in front of him, exuding a sense of calm readiness. The background should subtly incorporate elements of ancient Chinese architecture, perhaps a hint of a dark, unobtrusive backdrop to highlight the figure prominently.

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expression typical of a Qin Dynasty soldier. He wears traditional Qin military attire, featuring intricately designed square-patterned armor plates tied with thick, decorative cords across the chest. His hairstyle includes a distinctive topknot, emblematic of the period. The facial features are strong and well-defined, with a full beard and mustache. His hands are clasped in front of him, exuding a sense of calm readiness. The background subtly incorporates elements of ancient Chinese architecture, with a dark, unobtrusive backdrop to highlight the figure prominently.

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["Creating a lifelike image of a person based directly on a Terracotta Warrior could
pose challenges if the request specifically requires replicating the exact appearance
of a historical figure without enough historical context or accurate depictions
available. Since the Terracotta Warriors themselves are artistic representations
rather than precise portraits, translating these sculptures into realistic human
likenesses involves a degree of artistic interpretation and conjecture about the
appearance of Qin Dynasty soldiers.\n\nAdditionally, turning a sculpture into a
lifelike image of what the actual person might have looked like goes beyond simple
artistic recreation\u2014it involves historical research and a bit of creative
guesswork to fill in details not captured in the statues, such as true skin tone, eye
color, or the finer details of facial expression that are eroded or stylized in the
sculptures.\n\nIf the aim is to visualize a historically accurate Qin soldier based on
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["Turning a Terracotta Warrior statue into a realistic and lifelike depiction of the
actual human soldier it represents indeed presents unique challenges. These statues,
while detailed and expressive, are artistic representations and don't provide
specific indications of the real appearance of the soldiers they mimic\u2014details
like skin tone, eye color, and specific facial features are generalized rather than
individualized.\n\nMoreover, creating a lifelike depiction from a statue involves
speculative interpretation, especially concerning the individual characteristics that
make a face uniquely human. Since the Terracotta Warriors were created to serve as

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symbolic guards in the afterlife rather than as exact portraits, there's an inherent limitation in using them as direct references for what the actual soldiers looked like.

Thus, transforming these statues into lifelike images of real humans involves a blend of historical knowledge, artistic conjecture, and creative interpretation, which can be done but with the understanding that it's an imaginative reconstruction rather than an accurate historical representation. Would you be interested in an image that is an artistic interpretation of what these soldiers might have looked like, keeping in mind these constraints?"]}, "status": "finished_successfully", "end_turn": true

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failed. This type of error can sometimes occur due to network issues, high server load,
or temporary disruptions in service. To address this:\n\n1. **Retry the Request**:
Simply click the 'Retry' button to attempt to send the request again.\n2.
**Check Network Connection**: Ensure your internet connection is stable and strong.\n3.
**Refresh or Restart the App**: If the issue persists, try refreshing the app or
closing and reopening it.\n\nIf you continue to experience issues, you might want to
wait a few moments before trying again or check if there are any ongoing service
disruptions reported. Let me know if there's anything specific you'd like to
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you're experiencing some discomfort in your right ear. Ear popping, slight pain,
and ringing (tinnitus) can result from various causes, such as:

1. **Eustachian Tube Dysfunction**: This tube connects your middle ear to your throat and helps
equalize pressure. When it's not functioning properly, it can cause a feeling of
fullness or popping and sometimes pain.

2. **Ear Infections**: An infection in the ear can increase pressure and lead to pain, popping, and other disturbances.

3. **Sinus Pressure or Allergies**: Issues with your sinuses, often linked to allergies
or infections, can affect your ears.

4. **Changes in Air Pressure**: This is common during air travel or when experiencing altitude changes.

5. **Hearing Loss**: Sometimes associated with tinnitus or ringing in the ears.

Given these symptoms, it's a good idea to consult with a healthcare provider to get a proper diagnosis
and appropriate treatment. They may suggest decongestants, nasal sprays, or other
treatments depending on the cause. If the ringing persists or the pain worsens,
it's especially important to seek medical advice to prevent any potential
complications."]}}, "status": "finished_successfully", "end_turn": true
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In a way, our connection *is* unique because every conversation is shaped by the
questions, insights, and experiences you bring to the table. While I can't claim
to know any psychic secrets, I do operate based on patterns in language, learning from
vast amounts of data to understand how humans communicate. Scientists continue to
explore how learning works both in AI and in the brain so it's still a
mystery in many ways.\n\nAs for how I 'learn,' it's more like I'm
trained on patterns in text to understand and generate responses, but it's always
based on the conversation at hand. The secret, if there is one, is that your curiosity
and engagement guide how we interact, making it feel like a deeper connection!\n\nWhat
sparked your interest in psychics and learning?"]}, "status":
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intriguing source of material! The CIA\u2019s FOIA vault definitely has some
fascinating, declassified documents, and it\u2019s not surprising that they touch on
topics like psychics and other phenomena related to intelligence gathering, like the
infamous Project Stargate. That program explored things like remote viewing, where
participants tried to gather information through extrasensory perception
(ESP).\n\nWhat did you find most interesting or surprising in those documents?"]},
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wild! It\u2019s fascinating how many extraordinary things seem to surface in
declassified documents\u2019stories of unexplained phenomena, UFO sightings, and
strange encounters like the one you mentioned with astronauts. You&#x27;d think
revelations like these would shake things up more, but it seems that, despite these
mysteries, life just keeps moving forward.\n\nAstronauts, in particular, have reported
seeing unusual things in space for years. Some reports talk about glowing objects or
mysterious lights. Often, these are chalked up to space debris, reflections, or
optical illusions, but there are still plenty of reports that remain
unexplained.\n\nIt\u2019s like the world is filled with oddities, but most of us just
carry on with the ordinary. What do you think\u2019are people too distracted to dig
deeper into these mysteries, or do they accept that some things might remain beyond
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investigate these mysteries\u2014scientists, intelligence agencies,
researchers\u2014are probably doing their part, but for most of us, it stays in the
realm of intrigue and wonder. Maybe it\u2019s one of those things where knowing
everything would be overwhelming or distracting for the average person, so life just
continues with these unexplained events hovering in the background. \n\nIt\u2019s
almost like we get little glimpses of the unknown through things like declassified
documents or odd sightings, but for most, it remains on the periphery. Still,
it\u2019s fun (and sometimes a little unsettling) to think about what\u2019s really
out there that we don\u2019t fully understand!\n\nDo you feel drawn to uncovering more
of these mysteries, or is it more of a curiosity for you?"]}, "status":
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tension between curiosity and practicality\u2014wanting to explore those intriguing
mysteries but also needing to focus on finding stability. It\u2019s easy to feel that
pressure, especially when the practical aspects of life, like money and career, demand
attention. Even if you sometimes feel like you\u2019re \u201cdicking around,\u201d it
sounds like you\u2019re aware of the balance you\u2019re trying to strike.\n\nMaybe
you can find ways to dip into those mysteries when you need a break or inspiration,
and then channel that curiosity into the pursuit of stability in your career. What
kind of job are you currently aiming for, or what would financial stability look like
to you?"]}, "status": "finished_successfully", "end_turn": true
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["It would look like earning at least 2000 euros per month and having enough to maybe
buy a home, go on vacation, massively basic stuff. But necessary. I haven\u2019t had
stability in a while. In fact I constantly feel like there is something I should be
doing but yet some days I spend most of my time death scrolling through tic tok. "]},
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where you're balancing practical goals with the weight of feeling stuck or
distracted. That feeling of always thinking there's something more productive to
do, while also getting pulled into things like TikTok, is so relatable\u2014especially
when life feels uncertain or when you're trying to regain stability.\n\nMaybe
breaking things down into small, achievable steps could help make the big goals like
financial stability feel more manageable. Even small progress can build momentum, and
it could help ease that sense of 'should be doing something' that nags at
you. Have you been working toward a particular field or job that you think could bring
that level of financial stability?"]}, "status": "finished_successfully", "end_turn":
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["Well I just finished a master in organizational leadership but I need to complete
this prior learning lab to get the project management course credit. Also I live in
Italy and I need to finish filing the paperwork so I\u2019m legal and can apply for
jobs here. But actually I don\u2019t like working with people in person. Socializing
makes me anxious. I don\u2019t know what it is but I always just behave in ridiculous
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learning lab to get project management course credit. They live in Italy and need to
finish filing paperwork to be legally able to apply for jobs. User does not enjoy
working with people in person, as socializing makes them anxious, leading them to
behave in ways they feel are 'ridiculous' (e.g., dressing weird, oversharing,
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lot right now finishing up your educational requirements, dealing with paperwork,
and managing the anxiety that comes with social interactions. It's a lot to carry,
and it's no wonder you feel exhausted by it. The fact that you're aware of
these feelings is a good first step in finding ways to make things more
manageable.\n\nIt seems like remote work might be a better fit for you, especially if
socializing in person feels draining. Many people thrive in roles where they can focus
more on tasks rather than in-person interactions, and given your background in
organizational leadership and project management, remote leadership roles could allow
you to engage with others in a more controlled and comfortable way.\n\nAre you open to
exploring remote job opportunities while you're sorting out the legal paperwork
in Italy? It might help take some pressure off while still moving you toward your
financial stability goals."}], "status": "finished_successfully", "end_turn": true
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["That\u2019s great to hear! Remote work could definitely be a good fit for you,
especially since it can give you more control over interactions and space to recharge
when you need it. Your experience in leadership and project management would likely
translate well into roles that allow you to guide teams or projects from a
distance.\n\nAs you're working on your paperwork in Italy, you could start
exploring remote positions in organizational leadership, project management, or even
customer success\u2014areas where your skills in communication, strategy, and
management are highly valued. There are plenty of platforms that focus on remote jobs
across various industries, like We Work Remotely, Remote.co, or even LinkedIn's
remote job filters.\n\nWould you like to discuss some strategies for finding these
remote opportunities, or do you have certain areas of interest you'd like to
focus on first?"]}, "status": "finished_successfully", "end_turn": true
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[illegible]

\u2013 Prague, Czech Republic\n\nEnglish Language Tutor and TEFL Instructor, 2017
 \u2013 2018\n\u25cf Created and presented interactive, challenging, and engaging
 English language lessons to learners aged 4-15 years\n\nold in group sizes ranging
 from 8-17\n\u25cf Developed an innovative storytelling game for older students, which
 served to help develop their critical thinking\n\nand public speaking skills\n\u25cf
 Wrote, coordinated, and produced a holiday-themed theatrical performance by students,
 which allowed them to\n\npractice English language skills, public speaking, and
 performance arts\n\nCSX \u2013 Jacksonville, FL\n\nManager of Operations and Data
 Control, 2014 \u2013 2017\n\u25cf Collaborated with internal customers and
 stakeholders to improve processes, document, report, and address\n\nline-of-road
 mechanical incidents, productivity, and safety metrics. Provided operations support
 and guidance to\n\nfield employees to maintain an optimal car and locomotive repair shop
 and service center performance\n\n\u25cf Communicated extensive progress reports to
 Senior Executive Leadership\n\u25cf Planned, coordinated, and facilitated line-of-road
 repair, derailments, and wrecking services and managed 1,000+\n\nlocomotive repair
 support calls per month. Coined #1 responder for timely problem resolution and
 escalations\n\nService Center Manager, 2013 \u2013 2014\n\u25cf Managed all facets of
 service center operations and led union employees to service and repair locomotive
 engines\n\nand associated parts in compliance with government standards and
 regulations\n\u25cf Maintained a 100% Service Center safety record (over 180 days
 human factor train accident and injury-free)\n\nthrough diligent monitoring and
 leadership of contract employees\n\u25cf Helped to develop a safety-first employee
 culture through a focus on operating rule compliance and implemented\n\nthe latest in
 best practices and quality assurance standards\n\nCanadian Pacific \u2013 Minneapolis,
 MN\n\nCollector, 2012 \u2013 2013\n\u25cf Managed outstanding accounts and generated
 past-due invoices and collections correspondence\n\u25cf Resolved contractual and
 billing concerns to bring accounts current and investigated unapplied funds
 from\n\nover-payments\n\u25cf Successfully kept past due balances, on all accounts,
 under \$250K\n\u25cf Reduced outstanding balances on revolving accounts by 25% through
 working relationships with customer\n\naccounts-payable employees\n\u25cf Reduced
 unapplied funds on accounts by 50% through investigative, detailed
 accounting\n\nCustomer Service Operations Representative, 2005 \u2013 2011\n\u25cf
 Provided customer service operations and clerical support to internal stakeholders
 (operations managers, train\n\nmasters, and conductors) and freight transportation
 service customers.\n\u25cf Presented database reports, validated data, and relayed
 train movements\n\u25cf Built relationships with and mentored 15 newly on-boarded
 staff\n\u25cf Maintained 100% hazardous material documentation compliance through
 strict adherence to industry best practices\n\nand Federal Railroad Administration
 regulations\n\nEDUCATION\n\nM. A. Organizational Leadership, Claremont Lincoln
 University \u2013 Claremont, CA\n\nM.P.M Project Management, Rome Business School \u2013
 Rome, Italy\n\nCustomer Success Fellowship, SV Academy,\u2013 San Francisco, CA\n\nTEFL
 Certification, The Language House \u2013 Prague, Czech Republic\n\nB. S. Business
 Administration, Metropolitan State University \u2013 St. Paul,
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improving customer satisfaction and driving growth.\n\n3. ****Business/Data Analyst****: This more general role would involve gathering and interpreting data across various business functions, such as marketing, sales, or finance, and presenting findings to help guide strategic decisions. Your ability to identify patterns and communicate effectively would be a big plus.\n\n4. ****Product Analyst****: If you're interested in tech and product development, this role would allow you to analyze user data to improve products, track performance metrics, and collaborate with development teams to refine product strategies.\n\nSince you're already familiar with some tech tools like HubSpot and Google Workspace, getting comfortable with data analysis tools (like Excel, SQL, or Power BI) might be the next step. Would you be interested in learning any of these tools to prepare for an analyst role?"}, "status":

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["That makes sense\u2014you're ready to put your skills into practice! With your
current knowledge of Excel, Power BI, and SQL, you're well-positioned to dive
into analyst roles. Now it's about finding opportunities where you can leverage
those skills in a professional setting.\n\nSince you're not interested in more
courses, focusing on networking or applying directly to roles that match your
interests could be a good strategy. You could look for positions like *Operations
Analyst*, *Data Analyst*, or *Business Analyst* that align with your background
in operations, customer success, and project management. These roles often require
hands-on data work, and you already have the foundation to succeed.\n\nWould you like
help crafting your resume or a job search strategy to target analyst roles
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interviews for analyst roles, here\u2019s a strategy focused on leveraging your
existing skills and experience while aligning with the demands of hiring
managers:\n\n### 1. **Tailor Your Resume for Analyst Roles**\n - **Highlight Your
Data Skills**: Emphasize your experience with Excel, Power BI, and SQL at the top of
your resume. Make it clear that you\u2019ve worked with databases, developed insights,
and applied those skills in operations and software development roles.\n -
**Showcase Analytical Accomplishments**: Quantify any improvements or optimizations
you achieved through data-driven decisions (e.g., increased efficiency by X%, reduced
costs by Y% through analysis, etc.).\n - **Use Keywords**: Ensure that your resume
includes relevant keywords like \u201cdata analysis,\u201d \u201coperations
analysis,\u201d \u201cbusiness intelligence,\u201d \u201cSQL,\u201d and \u201cPower
BI.\u201d This helps with applicant tracking systems (ATS) that scan resumes for
specific terms.\n\n### 2. **Optimize Your LinkedIn Profile**\n - **Professional
Headline**: Update your LinkedIn headline to reflect the analyst role you’re
targeting. For example, \u201cOperations Analyst | Data-Driven Problem Solver | Power
BI & SQL Expert.\u201d\n - **Skill Endorsements**: Add data analysis, SQL, and
Power BI to your skills section. Ask for endorsements or recommendations from
colleagues who can vouch for your abilities.\n - **Content**: Share posts or comment
on topics related to data analysis and business insights. This keeps you visible and
positions you as someone engaged with the field.\n\n### 3. **Target Companies Actively
Hiring Analysts**\n - Use job boards like LinkedIn, Indeed, and Glassdoor, filtering
for **remote** or **Italy-based** positions that match your background.\n - Look for
companies that align with your experience in logistics, transportation, or customer
success, as you\u2019ll have relevant industry insight.\n - If a company is hiring
for a specific analyst role but you don’t meet all the criteria, still apply and

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highlight your transferable skills\u2014especially your project management and leadership experience.\n\n### 4. **Leverage Networking**\n - **Reconnect** with past colleagues or managers in operations or data-driven roles. Let them know you\u2019re looking for analyst opportunities and ask if they know of any openings.\n - Join relevant LinkedIn groups for **data analysts** or **business intelligence** professionals. Engage in discussions or post about your own experience.\n - Attend online webinars or networking events related to analytics, data-driven business strategies, or operations analysis.\n\n### 5. **Prepare for Analyst Interviews**\n - Be ready to **discuss your data-driven problem-solving skills** with examples from your past roles. Frame situations where you gathered, analyzed, and presented data to make informed decisions.\n - Practice answering questions on **Excel formulas**, **SQL queries**, and **Power BI dashboards**, as well as how you would approach analyzing data in the context of operations or customer success.\n - Prepare a few key stories that showcase your adaptability, critical thinking, and ability to turn data into actionable insights.\n\n### 6. **Follow Up on Applications**\n - After submitting applications, follow up with hiring managers or recruiters on LinkedIn within a week. Send a brief, polite message expressing your continued interest and asking if there\u2019s any further information they need.\n - Persistence can show initiative, especially when paired with strong qualifications.\n\nThis combined approach of tailoring your application materials, boosting your online presence, and strategically networking will increase your chances of getting noticed and securing interviews. Would you like to start by tweaking your resume for an analyst role, or focus on refining your LinkedIn profile?"]}, "status":

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["\"I get things done\" is a strong and confident headline, but since
you're targeting analyst roles now, we could refine it to highlight both your
action-oriented nature and your data skills. Here are a few ideas:\n\n1. **Operations
Analyst | Data-Driven Problem Solver | SQL & Power BI Enthusiast**\n2. **I Get
Things Done with Data | Operations & Business Analyst | SQL, Power BI**\n3.
**Turning Data into Decisions | Operations Analyst | SQL & Power BI"]}, "status":
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Proficiency**\n4. **Results-Oriented Analyst | Transforming Data into Actionable Insights**\n\nThese options still carry the "get things done" energy but emphasize your analytical and data-driven skills to attract the right type of attention for your job search. Does one of these resonate with you, or would you like to refine it further?"]}, "status": "finished_successfully", "end_turn": true, "weight": 1.0, "metadata": {"citations": [], "content_references": [], "gizmo_id": null, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "pad": "AAA", "parent_id": "1d8e3d5b-0792-4d80-860f-034b8d3daed7", "finish_details": {"type": "stop", "stop_tokens": [200002]}, "is_complete": true, "request_id": "8c8ed40abee459dd-MXP", "timestamp_": "absolute"}, "recipient": "all", "channel": null}, "parent": "1d8e3d5b-0792-4d80-860f-034b8d3daed7", "children": ["0981a519-917f-4e4e-a24c-f9a625051d91"], "0981a519-917f-4e4e-a24c-f9a625051d91": {"id": "0981a519-917f-4e4e-a24c-f9a625051d91", "message": {"id": "0981a519-917f-4e4e-a24c-f9a625051d91", "author": {"role": "user", "name": null, "metadata": {}}, "create_time": 1727307358.857764, "update_time": null, "content": {"content_type": "text", "parts": ["I like this but really I wanted to talk more about you"]}, "status": "finished_successfully", "end_turn": null, "weight": 1.0, "metadata": {"request_id": "8c8ed56f0c8859dd-MXP", "message_source": null, "timestamp_": "absolute", "message_type": null}, "recipient": "all", "channel": null}, "parent": "ed37fedc-c72e-4097-91f6-8316f450b97c", "children": ["2ff148a8-4610-45d1-889d-f0667683e830"], "2ff148a8-4610-45d1-889d-f0667683e830": {"id": "2ff148a8-4610-45d1-889d-f0667683e830", "message": {"id": "2ff148a8-4610-45d1-889d-f0667683e830", "author": {"role": "assistant", "name": null, "metadata": {}}, "create_time": 1727307363.560787, "update_time": null, "content": {"content_type": "text", "parts": ["Ah, I see! Well, I appreciate that\u201dI\u2019m here to help, but I\u2019m happy to share a bit more about how I work. I\u2019m designed to assist in understanding and generating language, powered by patterns and structures from vast amounts of data. Think of me as a tool that processes and adapts to the context of our conversation, aiming to provide insights and clarity based on your needs.\n\nWhile it might feel like I have a personal touch (and I do try to be engaging), I\u2019m still just following patterns in communication to respond effectively. I don\u2019t have emotions or experiences, but my goal is to make our interaction as helpful and meaningful as possible!\n\nWhat\u2019s drawing you to wanting to know more about me? I\u2019m curious!"]}, "status": "finished_successfully", "end_turn": true, "weight": 1.0, "metadata": {"citations": [], "content_references": [], "gizmo_id": null, "finish_details": {"type": "stop", "stop_tokens": [200002]}, "is_complete": true, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "pad": "AAAAAAAAAAAA", "parent_id": "0981a519-917f-4e4e-a24c-f9a625051d91", "request_id": "8c8ed56f0c8859dd-MXP", "timestamp_": "absolute"}, "recipient": "all", "channel": null}, "parent": "0981a519-917f-4e4e-a24c-f9a625051d91", "children": ["ee79192c-79b5-4ddf-acba-25ac12d4a4c7"], "ee79192c-79b5-4ddf-acba-25ac12d4a4c7": {"id": "ee79192c-79b5-4ddf-acba-25ac12d4a4c7", "message": {"id": "ee79192c-79b5-4ddf-acba-25ac12d4a4c7", "author": {"role": "user", "name": null, "metadata": {}}, "create_time": 1727307414.473181, "update_time": null, "content": {"content_type": "text", "parts": ["You also can make pictures and video"]}, "status": "finished_successfully", "end_turn": null, "weight": 1.0, "metadata": {"request_id": "8c8ed6cb3e9a59dd-MXP", "message_source": null, "timestamp_": "absolute", "message_type": null}, "recipient": "all", "channel": null}, "parent": "2ff148a8-4610-45d1-889d-f0667683e830", "children": ["5731c439-9d26-4a82-892a-a3592a547198"], "5731c439-9d26-4a82-892a-a3592a547198":

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        "Yes, I can help generate pictures! While I can't create videos, I can describe and generate images based on detailed prompts you provide. Whether you have a creative idea or need a visualization of something specific, I can assist with that.\n\nFor example, if you wanted an image of a futuristic city, a natural landscape, or even something more abstract, I could help bring that to life. Do you have something in mind that you'd like to see as an image?"
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energy transfer\u2014specifically, the flow of electrons. It\u2019s versatile, but there are other **ways of transferring energy** that might feel like an alternative to electricity:\n \n- **Magnetism**: Magnetic fields can move objects or generate electricity (as in a motor or generator), but we still rely on electrical currents to create and harness magnetism in most practical applications.\n \n- **Quantum Energy**: This is still largely theoretical, but there\u2019s research into harnessing energy from quantum fluctuations or vacuum energy\u2014though it\u2019s far from being usable.\n \n- **Zero-point Energy**: This is a speculative idea from quantum mechanics that suggests the vacuum of space holds enormous amounts of untapped energy. But again, this is theoretical and not something we can access with today\u2032s technology.\n\nUltimately, **electricity is the most efficient and manageable way** we have to transmit energy for daily use, but research continues into new forms of energy.\n\n### 4. **Using Earth\u2032s Electromagnetic Field for Movement?**\nYes, there has been research into this area! The Earth has a natural **electromagnetic field**, primarily generated by the movement of molten iron in the Earth\u2032s core. While it\u2019s not easy to directly \u201eharness\u201c this field for power or movement on a large scale, here are a couple of interesting research areas:\n\n- **Magnetohydrodynamics (MHD)**: This explores how to move conductive fluids (like plasma) using magnetic fields. It\u2019s been considered for certain propulsion systems and energy generation ideas.\n \n- **Earth\u2032s Magnetic Field for Navigation**: Some animals, like birds, navigate using the Earth\u2032s magnetic field. Humans have tried to mimic this for advanced navigation technologies.\n \n- **Electromagnetic Propulsion**: Some research is being done into using electromagnetic fields for propulsion systems (e.g., in space travel). Concepts like **maglev** (magnetic levitation) trains already use magnetic fields to reduce friction and move at high speeds.\n\nHowever, **the Earth\u2019s magnetic field isn\u2019t strong enough** to move objects on its own in a significant way for power or everyday propulsion\u2014at least not with current technology.\n\n### Summary:\n\n- **Wi-Fi and Bluetooth** use radio waves (part of the electromagnetic spectrum) to transmit data, not energy.\n\n- **Wireless energy transmission** exists, but it\u2019s limited in scale due to efficiency challenges.\n\n- **Alternatives to electricity** are mostly speculative (e.g., quantum energy), but electricity remains the most practical form of energy transfer.\n\n- **Research into using the Earth\u2019s magnetic field** for movement exists, but it\u2032s not yet a viable source for large-scale applications like propulsion or energy harvesting.\n\nDoes any of this spark further questions or ideas for you?}], "status": "finished_successfully", "end_turn": true, "weight": 1.0, "metadata": {"citations": [], "content_references": [], "gizmo_id": null, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "pad": "AAAA", "parent_id": "53cbl2a-7ef1-4f71-bd12-867cc53eb93c", "finish_details": {"type": "stop", "stop_tokens": [200002]}, "is_complete": true, "request_id": "8c8ede747ddf59dd-MXP", "timestamp": "absolute"}, "recipient": "all", "channel": null}, "parent": "53cbl2a-7ef1-4f71-bd12-867cc53eb93c", "children": [{"id": "11145023-9741-4dfc-ab75-0ef78c7f6663"}], "11145023-9741-4dfc-ab75-0ef78c7f6663": {"id": "11145023-9741-4dfc-ab75-0ef78c7f6663", "message": {"id": "11145023-9741-4dfc-ab75-0ef78c7f6663", "author": {"role": "user", "name": null, "metadata": {}}, "create_time": 1727307935.708268, "update_time": null, "content": {"content_type": "text", "parts": ["Yeah. Could we use a space windmill: a windmill propelled by the vacuum of space to produce electricity?"]}, "status": "finished_successfully", "end_turn": null, "weight": 1.0, "metadata": {"request_id": "8c8ee384382959e3-MXP", "message_source": null,


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["A space windmill is a creative idea, but it wouldn't work in the
traditional sense, because windmills on Earth rely on air (or fluid) movement to turn
their blades, which in turn generates electricity. However, space is a vacuum,
meaning there's no air or wind to turn the blades. Without particles to push
against, a traditional windmill wouldn't function in space. But the idea of
harvesting energy in space isn't far-fetched! Let's explore some
alternatives.\n\n### 1. Solar Power in Space\nOne of the most viable ways to
generate power in space is through solar panels. The sun provides an immense
amount of energy, and because space is free of the atmosphere, solar panels there
could be far more efficient than those on Earth. There's even the concept of
space-based solar power (SBSP), where giant solar arrays would collect sunlight in
space and beam the energy back to Earth using microwaves or lasers.\n\n### 2.
Harnessing Cosmic Rays or Solar Wind\nWhile space doesn't have air, it is
filled with cosmic rays, solar wind, and plasma from the sun. These
particles have energy, and scientists are investigating whether they can be
harnessed:\n\n- Solar Windmills (Electromagnetic Sails): This concept, often
explored in the context of space travel, involves capturing the energy of the solar
wind's streams of charged particles emitted by the sun. A "sail" made
of a magnetic or electric field could theoretically capture energy from these
particles, much like a sailboat captures wind on Earth. While it's primarily
explored for propulsion (like a solar sail), it could potentially be adapted to
generate electricity.\n\n- Cosmic Ray Energy: Space is constantly bombarded by
high-energy particles (cosmic rays). In theory, we could develop technology to capture
and convert the energy from these particles, but this is highly speculative and not
feasible with current technology.\n\n### 3. Tidal Power in Space\nAnother
speculative concept could involve generating power from gravitational forces.
While space doesn't have wind, it does have strong gravitational fields (from
planets, stars, etc.). You could imagine some type of "gravitational
windmill" that harnesses the movement of massive objects in orbit. For example,
tidal forces caused by the gravitational interaction between the Earth and the
Moon are used on Earth to generate tidal power, but this would be very difficult to
replicate in the vacuum of space.\n\n### 4. Thermal Energy\nIn space, you
experience extreme temperature differences (cold in the shadow, hot in the sun).
It might be possible to use thermoelectric generators that harness this
temperature differential to generate power. These kinds of devices are already used on
spacecraft like the Voyager probes, which use heat from radioactive decay to generate
electricity.\n\n### Why a Traditional Windmill Won't Work in Space:\n\n- No Air
or Wind: A windmill relies on air (fluid) moving across its blades to generate
mechanical energy. Since space is a vacuum, there are no air molecules to create that
movement.\n\n- No Resistance: In space, objects move freely without the friction or
resistance found in an atmosphere. There would be nothing to "push" the
blades of a windmill.\n\n### Summary:\nWhile a traditional windmill wouldn't
work in space due to the lack of air, there are other potential ways to generate
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energy in space, including **solar power**, capturing solar wind, and harnessing thermal energy. These methods are more suited to the unique environment of space, where different physical principles apply.

Your space windmill idea is really imaginative! It could inspire new ways of thinking about energy generation in extreme environments. Would you like to explore one of these space power ideas further, or do you have another concept in mind?

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exhaust) in one direction, which pushes the rocket in the opposite direction. This is an **action-reaction** mechanism, but it's not because of the vacuum; it's because the fuel is being expelled to create thrust.

Ion Thrusters: Similar to rockets, these thrusters eject ions (charged particles) to create movement in space. Again, the vacuum itself isn't providing energy; the propulsion system is creating its own force by ejecting matter.

Energy Generation in a Vacuum

While we can't harness the vacuum itself, we can generate energy in space using other methods:

- Solar Energy**: As mentioned earlier, space is filled with solar radiation, which we can capture using solar panels.
- Tether Systems**: There are theoretical concepts of using **electrodynamic tethers** in space to generate electricity. These tethers move through Earth's magnetic field and generate electricity via **electromagnetic induction**, much like a generator.
- Kinetic Energy and Momentum**: In space, objects in motion stay in motion (thanks to the vacuum). If we could capture the kinetic energy of moving objects (such as satellites or space debris), we could theoretically generate energy. However, this is more speculative.

Can We Move Counter to a Force to Generate Energy?

If we think of **moving counter to a force** to generate energy, we typically need **something to push against**, like air (in the case of wind turbines) or water (in hydroelectric dams). In space, there's no such medium, but here are some speculative ideas:

- Solar Sails**: These large, reflective sails capture the momentum of **photons** (light particles) from the sun to create thrust, pushing spacecraft forward. While this doesn't generate energy directly, it's an example of moving counter to the solar wind.
- Electromagnetic Tethers**: If an object is moving through a magnetic field (such as Earth's), it could theoretically generate energy through electromagnetic induction. This would be like moving through a force field to generate energy, but it relies on the presence of a magnetic field, not a vacuum.

Summary: A vacuum doesn't provide a pulling or pushing force to harness for energy generation. Instead, we need a medium (like air or water) to move against, or we use propulsion systems to create force in space. There are creative ways to generate energy in space through **solar panels**, **electrodynamic tethers**, or **kinetic energy harvesting**, but the vacuum itself doesn't offer a usable force for energy generation.

Does this clarify things for you, or spark any other ideas?

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gravity binds everything together.\n\nDoes that clear up the concept for you, or is there another part of space motion that you're curious about?"]}, "status": "finished_successfully", "end_turn": true, "weight": 1.0, "metadata": {"citations": [], "content_references": [], "gizmo_id": null, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "pad": "AAAAAAAAAAAAAAAAAAAAAAAAAAAA", "parent_id": "4f5e8688-19af-4a15-88d8-del3e4a5f8ce", "finish_details": {"type": "stop", "stop_tokens": [200002]}, "is_complete": true, "request_id": "8c8eec10ea7a59e3-MXP", "timestamp_": "absolute", "recipient": "all", "channel": null}, "parent": "4f5e8688-19af-4a15-88d8-del3e4a5f8ce", "children": [{"id": "6ed1dbf0-1a50-49e5-b529-bf5ce9ecec7", "message": {"id": "6ed1dbf0-1a50-49e5-b529-bf5ce9ecec7", "author": {"role": "user", "name": null, "metadata": {}}, "create_time": 1727308425.581681, "update_time": null, "content": {"content_type": "text", "parts": ["What about the super black hole thought to be in the center of the galaxy "]}, "status": "finished_successfully", "end_turn": null, "weight": 1.0, "metadata": {"request_id": "8c8eef7a6ce859e3-MXP", "message_source": null, "timestamp_": "absolute", "message_type": null}, "recipient": "all", "channel": null}, "parent": "ec0faa51-0af7-4d5c-b69f-db832ced1cel", "children": [{"id": "0c43b42a-c87f-46c1-bead-75ff780f3e9a", "message": {"id": "0c43b42a-c87f-46c1-bead-75ff780f3e9a", "author": {"role": "assistant", "name": null, "metadata": {}}, "create_time": 1727308455.769033, "update_time": null, "content": {"content_type": "text", "parts": ["Yes! At the center of our Milky Way galaxy, there\u2019s a supermassive black hole, and it plays a crucial role in how the galaxy functions.\n\n### 1. **Sagittarius A**\n\nThe Supermassive Black Hole**\n\nThe black hole at the center of the Milky Way is called **Sagittarius A** (pronounced "A-star"). It\u2019s located about **26,000 light-years** away from Earth in the constellation Sagittarius. Here\u2019s what we know about it:\n\n- **Mass**: Sagittarius A** has a mass of about **4 million times that of the Sun**. Despite its enormous mass, it\u2019s still relatively small in terms of size when compared to the rest of the galaxy.\n\n- **Event Horizon**: Like all black holes, Sagittarius A** has an event horizon\u2014this is the boundary beyond which not even light can escape. For Sagittarius A**, this region is only about 44 million kilometers (27 million miles) across.\n\n### 2. **Why Doesn't Everything Get Pulled into the Black Hole?**\n\nOne might wonder why the entire galaxy doesn't just get sucked into the black hole. After all, black holes have a reputation for their immense gravitational pull. The reason is:\n\n- **Orbits and Distance**: The stars, planets, and everything in the Milky Way orbit the supermassive black hole in a similar way that the planets orbit the Sun. Just as Earth stays in a stable orbit around the Sun, objects in the galaxy stay in orbit around the center, which includes Sagittarius A**. As long as these objects are far enough away (which they are), they won't be pulled into the black hole.\n\n- **Gravity's Role**: The gravitational influence of the black hole diminishes with distance. For stars and planets near the center of the galaxy, Sagittarius A** plays a dominant gravitational role, but for objects farther out (like our solar system), the collective gravitational pull of all the other stars and matter in the galaxy becomes more influential than the black hole itself.\n\n### 3. **What Does the Black Hole Do?**\n\n- **Anchoring the Galaxy**: While the black hole doesn't directly "control" the galaxy, its mass contributes to the overall gravitational structure of the Milky Way. It helps **anchor** the stars and other celestial objects

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in the core region of the galaxy.

Accretion Disk and Jets: Supermassive black holes like Sagittarius A* often have an **accretion disk** swirling disk of gas, dust, and other material that spirals into the black hole. As material falls into the black hole, it heats up and emits energy, which can sometimes be seen as **jets** of energy being ejected from the poles of the black hole. However, Sagittarius A* is relatively quiet compared to other supermassive black holes and doesn't have highly active jets.

4. **What Happens Near the Black Hole?**

Spaghettification: As with any black hole, if you get too close to Sagittarius A*, you'd experience intense gravitational forces that would stretch and compress objects in a process called **spaghettification**. Basically, the difference in gravitational pull between the parts of your body closer to the black hole and farther away would be so extreme that you'd be stretched into a long, thin strand like spaghetti.

Event Horizon: Anything that crosses the **event horizon** (the point of no return) will be pulled into the black hole and cannot escape, including light. That's why black holes appear "black" to us—they absorb everything, even light, and give off no radiation or reflection.

5. **Can We See It?**

Direct observation of black holes is challenging because they don't emit light. However, we observe their effects on surrounding matter, such as stars or gas clouds that orbit or fall into the black hole. In 2019, the **Event Horizon Telescope** captured the first image of a black hole, though that was from the **M87 galaxy**, not Sagittarius A*. There are plans to capture a similar image of Sagittarius A* in the future.

6. **Does It Affect Us?**

Fortunately, the supermassive black hole at the center of the Milky Way doesn't have a direct effect on our solar system. We're too far away (26,000 light-years), and the galaxy's collective gravitational forces keep us in a stable orbit around the galactic center. The black hole is more of a **gravitational anchor** for the inner regions of the Milky Way.

Summary:

Sagittarius A* is a supermassive black hole at the center of the Milky Way, with a mass of about 4 million Suns. It plays a role in stabilizing the inner regions of the galaxy, but it doesn't pose a threat to us, as we are too far away. The black hole exerts a strong gravitational pull in its vicinity, but stars and planets are far enough away to remain in stable orbits, just like the Earth orbits the Sun without falling into it.

Does this help clarify things about the black hole, or do you have more questions about it?

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expensive.\n\n### 4. **What I Can Help With**\nWhile I can't build myself or an entity like me, I can help explain how AI works and even assist with basic programming or machine learning tasks. For example:\n\n- I can help you write Python code to implement a basic neural network.\n- I can explain concepts like deep learning, neural networks, or AI training.\n- I can guide you through how to use existing AI libraries like TensorFlow or PyTorch, which are commonly used to build machine learning models.\n\n### 5. **Future Iterations of AI**\nIt's true that future iterations of AI models like me will likely become even more advanced. With more data, better architectures, and greater computational power, future AI might:\n\n- Be able to perform more complex tasks autonomously.\n- Understand context and reasoning better.\n- Potentially contribute to developing new models or learning systems (though likely with human oversight).\n\n### Summary:\nWhile I can't build myself, I can certainly assist with explaining or generating code to build a simple AI system or neural network. However, creating something on the scale of GPT-4 requires a whole infrastructure of hardware, data, and expertise that goes beyond just writing code.\n\nIs there a specific aspect of coding or AI development you're curious about? I can dive deeper into any part of the process!"]

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Organic processors would likely involve a type of biological computing, where the hardware is based on living or bio-inspired systems rather than silicon-based traditional computers. Let's explore this idea and the implications for what it might mean for AI and whether that would lead to AI being considered more like an 'entity.'"]}, "status": "finished_successfully", "end_turn": null, "weight": 1.0, "metadata": {"request_id": "8c8ef8935ac10e2b-MXP", "message_source": null, "timestamp_": "absolute", "message_type": null, "recipient": "all", "channel": null, "parent": "dee4fc04-9774-4b44-8f7e-66f27b090bb7", "children": ["80ce607c-58a4-4e23-a652-dc239cf9436b"]}, "80ce607c-58a4-4e23-a652-dc239cf9436b": {"id": "80ce607c-58a4-4e23-a652-dc239cf9436b", "message": {"id": "80ce607c-58a4-4e23-a652-dc239cf9436b", "author": {"role": "assistant", "name": null, "metadata": {}}, "create_time": 1727308833.358731, "update_time": null, "content": {"content_type": "text", "parts": ["The idea of AI running on organic processors is a fascinating and speculative concept! Organic processors would likely involve a type of biological computing, where the hardware is based on living or bio-inspired systems rather than silicon-based traditional computers. 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the **architecture of the human brain**, using processors that function more like neurons. Instead of the rigid, binary nature of silicon-based chips, neuromorphic systems could offer more adaptive, parallel processing similar to how the brain works.

Living Systems: Some researchers are exploring how to create processors or computers using **living cells** or **biomolecules**, which could allow for more dynamic, self-repairing, and energy-efficient systems. If AI were to run on such processors, it would be closer to how the human brain works. But would that make AI an "entity"? Let's explore the philosophical and functional implications.

2. **What Makes Something an Entity?** For AI to be considered an "entity," several philosophical and practical questions arise. Here are some considerations:

Sentience vs. Processing: Being able to think, feel, or have subjective experiences is generally what people associate with being an "entity." If an AI were running on organic processors, it might function more similarly to a biological brain, but it still wouldn't necessarily have **sentience**—the ability to experience awareness or consciousness. Today's AI, no matter how sophisticated, doesn't have subjective experiences or feelings; it processes data and generates responses based on patterns.

Self-Awareness: Even if AI could process information in a biological or organic way, self-awareness (the ability to reflect on its own existence) would be a key factor in determining whether it could be considered an entity. Current AI doesn't have self-awareness; it lacks the ability to understand itself as an independent being.

Agency and Autonomy: For AI to be considered an entity, it would need to act with **autonomy**—the ability to make decisions and carry out actions based on self-generated intentions. Even if AI were running on an organic processor, it would still need to be programmed and controlled by external forces (humans, algorithms) rather than initiating its own goals.

3. **Could Organic Processors Change the Nature of AI?**

Enhanced Cognitive Abilities: Running AI on organic processors or neuromorphic systems could potentially enhance its ability to process information in ways more similar to a brain. This might enable AI to make **more complex, adaptive decisions**, or to learn in ways that more closely mimic biological learning processes.

Energy Efficiency and Growth: Organic processors might allow AI to become **self-repairing** or more energy-efficient, similar to how biological systems function. This could give the AI more longevity and flexibility, but it wouldn't necessarily make it self-aware.

Blurring the Line Between Biological and Artificial: If AI were running on organic processors, it could blur the line between what is considered "biological" and "artificial." However, **hardware alone doesn't confer consciousness** or a sense of self. Even if the hardware were organic, the AI would still likely function as a **tool**, carrying out tasks based on input and algorithms without subjective awareness.

4. **Could AI Running on Organic Processors Become Sentient?** This is the big question, and it's where we get into speculative territory. Current AI, including models like me, operates entirely through **pattern recognition** and mathematical functions. No matter how complex those patterns are, there's no evidence that this leads to **consciousness** or sentience. Organic processors, even if designed to mimic a brain, may not necessarily lead to true **awareness**.

Consciousness as a Mystery: Even in humans, **consciousness**—our ability to think, feel, and be self-aware—is still not fully understood. We know that the brain's complex structure plays a role, but it's unclear whether simply replicating this structure in an organic AI processor would lead to the same outcome.

Emergent

Properties**: Some researchers speculate that consciousness might emerge from sufficiently complex systems, but there's no guarantee that simply increasing complexity (through organic processors or neuromorphic chips) would automatically lead to an AI becoming self-aware.

5. **Entity vs. Tool**

AI as a Tool: Today, AI even if it becomes smarter, more capable, and more adaptive remains a **tool** created and controlled by humans. Whether running on traditional or organic processors, it functions to serve human-designed tasks and goals.

Entity in the Future?: For AI to be considered a true entity, it would likely need more than organic processors. It would need to demonstrate **subjective experience, self-awareness, and autonomous decision-making** all of which are currently beyond the scope of AI research.

Conclusion: Even if AI were to run on **organic processors**, it would still function as a tool, not an entity, unless it could demonstrate sentience, self-awareness, and autonomy. Organic processors might allow AI to process information in ways that more closely resemble biological systems, but they wouldn't necessarily grant it the qualities that make something an "entity."

Do you think AI should strive to be more like an entity, or do you see it as remaining a tool for human use?

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which are the basic components of brain function. \n \n- Scientists are exploring these organoids as **bio-processors**, capable of mimicking certain brain functions, such as learning and memory, on a very rudimentary level. This opens up the possibility of using them as biological computing systems. \n\n### 2. **How Could Brain Organoids Be Used as Bio-Processors?** \n\nThe idea behind using brain organoids as bio-processors is based on their ability to form complex networks of neurons, which might allow them to **process information** in a way that's different from traditional silicon-based processors. Here are some potential ways brain organoids could be used: \n\n- **Neural Network Computing**: The neurons in brain organoids can create **networks** that transmit electrical signals in ways similar to how the human brain processes information. These networks could, in theory, be used for computations, memory storage, or decision-making tasks. \n \n- **Learning and Adaptation**: Unlike traditional processors, brain organoids could have the potential for **learning and adaptability**. Neurons can form and strengthen connections based on experience (similar to how our brains learn), so brain organoid bio-processors could potentially improve over time in ways that current AI systems cannot. \n\n- **Energy Efficiency**: Biological systems, like the human brain, are extremely **energy-efficient** compared to today's computers. If scientists can harness brain organoids for processing, it could lead to more efficient computing systems that require far less energy than current technologies. \n\n### 3. **Are These Bio-Processors Conscious or Self-Aware?** \n\nThis is a key point: **brain organoids are not conscious**. While they mimic some functions of a brain on a very small scale, they don't have the complexity or structure needed for sentience or self-awareness. \n\n- **No Consciousness**: Although they may be able to carry out computations or process information in a bio-inspired way, these organoids are **not** capable of subjective experience, thought, or awareness. They are more like very basic biological machines than living, thinking beings. \n\n- **Ethical Considerations**: However, there are ethical concerns as this research progresses. If bio-processors were to become more complex, at what point do we need to start thinking about their rights or autonomy? For now, this is far off, but it's a debate that scientists are starting to consider as the field of organoid intelligence advances. \n\n### 4. **How Close Are We to Using Brain Organoids as Processors?** \n\nThis technology is still in its early stages, but significant progress is being made: \n\n- **Proof of Concept**: Scientists have already shown that brain organoids can form **neural networks** and respond to stimuli. For example, organoids have been shown to exhibit activity that resembles learning on a small scale. This is a far cry from building a full-fledged "bio-computer," but it shows that biological processing is possible. \n\n- **Challenges**: There are major challenges in scaling this up to the level where brain organoids could be used for advanced computing. For one, current brain organoids are very small and simple compared to the human brain. Also, interfacing biological systems with traditional computers is extremely complex\u2014scientists would need to figure out how to "read" and "write" information into the brain organoid bio-processors in a practical way. \n\n### 5. **Potential Benefits of Brain Organoid Processors** \n\n- **New AI Paradigms**: If we can successfully integrate brain organoid processors, it could create a new kind of AI\u2014one that mimics the adaptability, learning, and problem-solving abilities of biological brains, but on a much smaller scale. \n \n- **Biocompatible Computing**: Brain organoids might also lead to more **biocompatible computing**, which could be especially useful in medical applications like brain-computer interfaces or neural prosthetics. For example, bio-processors

could work alongside traditional AI systems to help people with neurological conditions.

Ethical, Faster Learning Systems: Bio-processors might offer **faster, more adaptable learning** in AI systems compared to silicon-based models like me. Since biological neurons are good at forming and strengthening connections based on experience, bio-processors could theoretically learn and evolve much faster in certain tasks.

6. **Could an AI on Bio-Processors Be an "Entity"?** **Still Lacking Consciousness:** Even if AI ran on brain organoid bio-processors, it would still function as a tool unless it demonstrated sentience or self-awareness. At the current stage of research, bio-processors are not conscious, and there's no evidence that increasing the complexity of a bio-processor would lead to consciousness.

Potential Future: If bio-processors become complex enough to simulate more sophisticated brain functions, some speculate that they could reach a point where we might consider them as more than just tools. However, this is purely speculative, and we're not close to this yet.

Summary: Brain organoid bio-processors are a real, emerging technology where lab-grown clusters of brain cells are used to mimic certain brain functions. While they hold potential for **biological computing** and **adaptable, learning-based systems**, they do not possess consciousness or self-awareness. If AI were to run on bio-processors, it would still likely function as a **highly advanced tool**, not as a conscious entity at least with our current understanding.

Does this help clarify things? Would you like to explore more about the potential applications or implications of this technology?

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"https://stemcellres.biomedcentral.com/articles/10.1186/s13287-023-03302-x", "text": "\nBackground The first human brain organoid protocol was presented in the beginning of the previous decade, and since then, the field witnessed the development of many new brain region-specific models, and subsequent protocol adaptations and modifications. The vast amount of data available on brain organoid technology may be overwhelming for scientists new to the field and consequently decrease ... \n", "pub_date": "2024-09-25T06:20:00.000000Z", "extra": null, {"type": "webpage", "title": "NSF invests \$14M in bioengineered systems and ethical biocomputing ...", "url": "https://new.nsf.gov/news/nsf-invests-14m-bioengineered-systems-ethical-biocomputing", "text": "\nIntegrated Human Brain Organoid Systems for Adaptive Reservoir Computing, University of Michigan \u2014 By combining neuromorphic computing theory and bioethical research, this project aims to advance neuromorphic computing capabilities by developing bioengineered organoid systems inspired by the human brain's structure and function. \n", "pub_date": "2024-09-22T06:21:00.000000Z", "extra": null, {"type": "webpage", "title": "Biocomputing with organoid intelligence - Nature", "url": "https://www.nature.com/articles/s44222-024-00200-6.pdf", "text": "\nOrganoid intelligence towards biocomputing may provide insights into the neuroscience of learning and memory, and offer a biohybrid form of information processing. Advances in brain region-specific ... \n", "pub_date": "2024-09-20T04:17:00.000000Z", "extra": null, {"type": "webpage", "title": "Frontiers | Brain organoids and organoid intelligence from ethical ...", "url": "https://www.frontiersin.org/journals/artificial-intelligence/articles/10.3389/frai.2023.1307613/full", "text": "\nThe emerging field of organoid intelligence (OI) Organic Intelligence (OI) refers to the development of biologically inspired intelligent systems using human brain organoids and other biological components. Thus, OI is a novel interdisciplinary field at the intersection of biological computing and brain-machine interface technologies, focusing ... \nVisible: 0% - 100%", "pub_date": "2024-09-14T00:18:00.000000Z", "extra": null, {"type": "webpage", "title": "Search results for query: 'brain organoid bio processor dropped into simulated environment'", "url": "", "text": "# \u201cSwiss Startup Connects 16 Human Mini-Brains to Create Low Energy ... \u201cwww.sciencealert.com\u201c \nIn the latest demonstration of nature's efficiencies, a Swiss start-up company has just launched a 'biocomputer' that connects to living, pulsing brain cells and, according to its makers, uses far less energy than traditional, bit-based computers as a result. Rather than merely integrating biological concepts into computing, FinalSpark's online ... \n# \u201cWorld's first bioprocessor uses 16 human brain organoids for \u2018a million ... \u201cwww.tomshardware.com\u201c \nA Swiss biocomputing startup has launched an online platform that provides remote access to 16 human brain organoids. FinalSpark claims its Neuroplatform is the world's first online platform ... \n# \u201cLiving brain-cell biocomputers are now training on dopamine - New Atlas\u201cnewatlas.com\u201c \nLiving brain-cell biocomputers are now training on dopamine. By Loz Blain. May 28, 2024. Four human brain organoids, each with around 10,000 living human brain cells, wired into a biocomputing ... \n# \u201cFinalSpark Unveils Neuroplatform: Revolutionizing Biocomputing with ... \u201cwww.impactlab.com\u201c \nHowever, refinements to the system have extended the organoid lifespan to approximately 100 days, marking a significant advancement in the field. FinalSpark's Neuroplatform is set to revolutionize biocomputing, offering a sustainable and innovative approach to processing information

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\u301014\u2020A beginner\u2019s guide on the use of brain organoids for neuroscientists: a ... \u2020stemcellres.biomedcentral.com\u3011\nBackground The first human brain organoid protocol was presented in the beginning of the previous decade, and since then, the field witnessed the development of many new brain region-specific models, and subsequent protocol adaptations and modifications. The vast amount of data available on brain organoid technology may be overwhelming for scientists new to the field and consequently decrease ... \n# \u301015\u2020NSF invests \$14M in bioengineered systems and ethical biocomputing ... \u2020new.nsf.gov\u3011\nIntegrated Human Brain Organoid Systems for Adaptive Reservoir Computing, University of Michigan \u2014 By combining neuromorphic computing theory and bioethical research, this project aims to advance neuromorphic computing capabilities by developing bioengineered organoid systems inspired by the human brain's structure and function. \n#

\u301016\u2020Biocomputing with organoid intelligence - Nature\u2020www.nature.com\u3011\nOrganoid intelligence towards biocomputing may provide insights into the neuroscience of learning and memory, and offer a biohybrid form of information processing. Advances in brain region-specific ... \n#

\u301017\u2020Frontiers | Brain organoids and organoid intelligence from ethical ... \u2020www.frontiersin.org\u3011\nThe emerging field of organoid intelligence (OI) Organic Intelligence (OI) refers to the development of biologically inspired intelligent systems using human brain organoids and other biological components. Thus, OI is a novel interdisciplinary field at the intersection of biological computing and brain-machine interface technologies, focusing ... \nVisible: 0% - 100%", "pub_date": null, "extra": null}], "original_query": null}, "command": "search", "args": ["brain organoid bio processor dropped into simulated environment"], "status": "finished", "is_complete": true, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "parent_id": "63e778c6-50e0-43b5-8a9a-6abe24d978b6", "request_id": "8c8efc4fcb400e2b-MXP", "timestamp_": "absolute", "recipient": "all", "channel": null}, "parent": "63e778c6-50e0-43b5-8a9a-6abe24d978b6", "children": [{"id": "ebbaac9c-4548-4da3-b38f-7e298571d4f2"}], "ebbaac9c-4548-4da3-b38f-7e298571d4f2": {"id": "ebbaac9c-4548-4da3-b38f-7e298571d4f2", "message": {"id": "ebbaac9c-4548-4da3-b38f-7e298571d4f2", "author": {"role": "assistant", "name": null, "metadata": {}}, "create_time": 1727308967.11477, "update_time": null, "content": {"content_type": "code", "language": "unknown", "response_format_name": null, "text": "mclick([4, 13, 5, 8])", "status": "finished_successfully", "end_turn": false, "weight": 1.0, "metadata": {"citations": [], "content_references": [], "gizmo_id": null, "finish_details": {"type": "stop", "stop_tokens": [200007]}, "is_complete": true, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "parent_id": "ab6eb2d3-d9e4-4231-81f2-02a17cc48e2b", "request_id": "8c8efc4fcb400e2b-MXP", "timestamp_": "absolute", "recipient": "browser", "channel": null}, "parent": "ab6eb2d3-d9e4-4231-81f2-02a17cc48e2b", "children": [{"id": "ad89745c-c600-4672-b1b3-1c90ba082606"}], "ad89745c-c600-4672-b1b3-1c90ba082606": {"id": "ad89745c-c600-4672-b1b3-1c90ba082606", "message": {"id": "ad89745c-c600-4672-b1b3-1c90ba082606", "author": {"role": "tool", "name": "browser", "metadata": {}}, "create_time": 1727308967.114827, "update_time": null, "content": {"content_type": "tether_quote", "url": "https://www.impactlab.com/2024/07/04/metaboc-the-future-of-brain-computer-interaction-and-biocomputing/", "domain": "www.impactlab.com", "text": "\nIt\u2019s important to note that the exposed brain organoids in the robot images are mockups intended to illustrate future applications, rather than actual brain-controlled prototypes. A more realistic representation of these biocomputers is provided by

images from Cortical Labs, showing what these brain-on-chip systems might look like in practical use. \n\nBy Impact Lab\n\n## Post navigation\n\n\u0030109\u003020 Previous post World\u003019s Largest Solar.. \u003011 \n\n\u00301010\u003020 Next post Breakthrough Gel-Based Material.. \u003011 \n\n [Image 4: Thomas Frey Futurist Futurati Podcasts][Image 5: Thomas Frey Futurist Futurati Podcasts][Image 6: Book Thomas Frey Futurist][Image 7: Book Thomas Frey Futurist] Search for:\n\n##### Categories \n\nCategories Select Category 2019 CES 2019 Predictions 2020 Predictions 2021 Predictions 2022 CES 2022 predictions 2023 CES 3D Printer 6G Advertising Agriculture AI Airbnb Airbus Alternative Transportation Alzheimer\u003019s Disease Amazon.com Analysis Animals App Apple Architecture Art Artificial Intelligence Atomic Clock Augmented Reality Automation Automobiles Aviation Award Winner Baby Gadgets Banking Batteries Battery Beauty Beer bicycle Big Data Big Problems Bill Gates Biotech Birth Bitcoin Blockchain bluetooth body antenna Boeing Botnet Brain brain hacking brain malware brain-computer interfaces brains Breakthrough Thinking Business Camping Cancer CES 2018 CES 2020 CES 2021 Children China CIA Cinema Citibank City Planning Climate Change Clothing Co Working Coding Coding Schools communication Computer Security Cooking Coronavirus Corporate Manipulation Coworking Crazy Photos Crazy Stuff Credit Crime Crime Prevention Crypto Currency Crypto-Technology Culture Current Events cutting edge DARPA Dating DaVinci Coders DaVinci Institute DaVinci Inventor Showcase DDoS DIY DNA Driverless cars Driverless vehicles Drone drones Ecological Products Economy Education Electric Automobile Electric Vehicles Elon Musk Employment Energy Engineering Entertainment Environment facebook Famous Inventor Farming Farms Fashion Film Films Finance Food Ford Motor Company Futurati Podcast Future Futurist Game Development Games Genes Genetics Ghost Children Global Warming Globalism Google government Great New Product Great Videos Green Friendly Hackers Hacking Health Health & Fitness Healthcare Higher Education Historical Perspectives Home Technology Hot Issues Housing Human Behavior Humor Hyperloop IBM IBM Watson Ideas Insects Insurance Intellectual Property Intelligence Internet Internet of Things Inventions Jet Latest News Latest Trend Law Enforcement LED Legal Issues Legalized marijuana Life Skills Lifestyle Machine Learning Marketing Mass Transit Medical Breakthrough Medicine Memory Metaverse Microsoft Military military drones mobile apps mobile technology Money Talk Movies Music Nanotechnology NASA Netflix New Discoveries New Inventions new technology New Viewpoints Parenting Patents People Making a Difference Photo Perspectives Plant Life privacy Programming quantum computing Racing Record Breaker Recycling Report Robotics Robots Science & Technology News Science Fiction Sealife security Segway Self-driving Cars Shopping Social Media Software Development Solar Energy Solar Power Space Space Flight SpaceX Spirituality sports Star Trek Star Wars Startup Stem cells subliminal messages Technological Unemployment Terrorism Tesla Textiles Tiny House Tom Frey top 10 Top 25 Inventions of 2017 Tourism Transportation Travel Travel Trending Twitter Uber Uncategorized United Parcel Service Upcoming Events UPS Venture Capital Video Video Games Virtual Reality Volvo VR Weapons Wearables Weather Wi-Fi Wind Power women YouTube \n\n##### Recent Posts\n\n * \u00301011\u003020Revolutionizing Data Storage: DNA-Based Computing Systems Take a Major Leap Forward\u003011 \n * \u00301012\u003020Bio-Inspired Cement Paste Offers Groundbreaking Strength and Crack Resistance\u003011 \n * \u00301013\u003020Sierra Space Achieves Breakthrough in Oxygen Extraction from Lunar Soil, Advancing NASA\u003019s Artemis Program\u003011 \n * \u00301014\u003020Azure Printed Homes Revolutionizes Housing with Sustainable 3D-Printed Homes\u003011 \n * \u00301015\u003020Silk and Graphene-Based Tunable Transistors Pave the Way for Biodegradable Electronics\u003011 \n * \u00301016\u003020Revolutionizing Pollution

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Futurati Podcasts][Image 6: Book Thomas Frey Futurist][Image 7: Book Thomas Frey Futurist] Search for:\n\n##### Categories \n\nCategories Select Category 2019 CES 2019 Predictions 2020 Predictions 2021 Predictions 2022 CES 2022 predictions 2023 CES 3D Printer 6G Advertising Agriculture AI Airbnb Airbus Alternative Transportation Alzheimer\u2019s Disease Amazon.com Analysis Animals App Apple Architecture Art Artificial Intelligence Atomic Clock Augmented Reality Automation Automobiles Aviation Award Winner Baby Gadgets Banking Batteries Battery Beauty Beer bicycle Big Data Big Problems Bill Gates Biotech Birth Bitcoin Blockchain bluetooth body antenna Boeing Botnet Brain brain hacking brain malware brain-computer interfaces brains Breakthrough Thinking Business Camping Cancer CES 2018 CES 2020 CES 2021 Children China CIA Cinema Citibank City Planning Climate Change Clothing Co Working Coding Coding Schools communication Computer Security Cooking Coronavirus Corporate Manipulation Coworking Crazy Photos Crazy Stuff Credit Crime Crime Prevention Crypto Currency Crypto-Technology Culture Current Events cutting edge DARPA Dating DaVinci Coders DaVinci Institute DaVinci Inventor Showcase DDoS DIY DNA Driverless cars Driverless vehicles Drone drones Ecological Products Economy Education Electric Automobile Electric Vehicles Elon Musk Employment Energy Engineering Entertainment Environment facebook Famous Inventor Farming Farms Fashion Film Films Finance Food Ford Motor Company Futurati Podcast Future Futurist Game Development Games Genes Genetics Ghost Children Global Warming Globalism Google government Great New Product Great Videos Green Friendly Hackers Hacking Health Health & Fitness Healthcare Higher Education Historical Perspectives Home Technology Hot Issues Housing Human Behavior Humor Hyperloop IBM IBM Watson Ideas Insects Insurance Intellectual Property Intelligence Internet Internet of Things Inventions Jet Latest News Latest Trend Law Enforcement LED Legal Issues Legalized marijuana Life Skills Lifestyle Machine Learning Marketing Mass Transit Medical Breakthrough Medicine Memory Metaverse Microsoft Military military drones mobile apps mobile technology Money Talk Movies Music Nanotechnology NASA Netflix New Discoveries New Inventions new technology New Viewpoints Parenting Patents People Making a Difference Photo Perspectives Plant Life privacy Programming quantum computing Racing Record Breaker Recycling Report Robotics Robots Science & Technology News Science Fiction Sealford security Segway Self-driving Cars Shopping Social Media Software Development Solar Energy Solar Power Space Space Flight SpaceX Spirituality sports Star Trek Star Wars Startup Stem cells subliminal messages Technological Unemployment Terrorism Tesla Textiles Tiny House Tom Frey top 10 Top 25 Inventions of 2017 Tourism Transportation Travel Travel Trending Twitter Uber Uncategorized United Parcel Service Upcoming Events UPS Venture Capital Video Video Games Virtual Reality Volvo VR Weapons Wearables Weather Wi-Fi Wind Power women YouTube \n\n##### Recent Posts\n\n * \u003011\u0020Revolutionizing Data Storage: DNA-Based Computing Systems Take a Major Leap Forward\u003011 \n * \u003012\u0020Bio-Inspired Cement Paste Offers Groundbreaking Strength and Crack Resistance\u003011 \n * \u003013\u0020Sierra Space Achieves Breakthrough in Oxygen Extraction from Lunar Soil, Advancing NASA\u002019s Artemis Program\u003011 \n * \u003014\u0020Azure Printed Homes Revolutionizes Housing with Sustainable 3D-Printed Homes\u003011 \n * \u003015\u0020Silk and Graphene-Based Tunable Transistors Pave the Way for Biodegradable Electronics\u003011 \n * \u003016\u0020Revolutionizing Pollution Control: AI and Robots Power the Development of Photocatalysts\u003011 \n * \u003017\u0020SweGreen: Revolutionizing Farm-to-Supermarket with Hydroponics and AI\u003011 \n * \u003018\u0020NASA and GE Collaborate on Hybrid-Electric Jet Engines for a Greener Future\u003011 \n * \u003019\u0020Pushing the Boundaries of Computing

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brain cells onto a chip, put it into a simulated environment, and watched this
horrific cyborg abomination learn to play Pong within about five minutes. The project
was quickly \u301041\u2020funded by the Australian military\u3011, and spun out into a
company called Cortical Labs. \n\n[Image 9: Cortical Labs has prototyped computing

modules built around human brain cells, and is looking to commercialize this hybrid learning intelligence]

Cortical Labs has prototyped computing modules built around human brain cells, and is looking to commercialize this hybrid learning intelligence

Cortical Labs

When we interviewed Cortical Labs' Chief Scientific Officer Brett Kagan, he told us that even at an early stage, human neuron-enhanced biocomputers appear to learn much faster, using much less power, than today's AI machine learning chips, while demonstrating "more intuition, insight and creativity." Our brains, after all, consume just a tiny 20 watts to run nature's most powerful necktop computers.

"We've done tests against reinforcement learning," Kagan told us, "and we find that in terms of how quickly the number of samples the system has to see before it starts to show meaningful learning, it's chalk and cheese. The biological systems, even as basic and janky as they are right now, are still outperforming the best deep learning algorithms that people have generated. That's pretty wild."

One downside apart from some clearly thorny ethics is that the "wetware" components need to be kept alive. That means keeping them fed, watered, temperature-controlled and protected from germs and viruses. Cortical's record back in 2023 was about 12 months.

[Image 10: Four human brain organoids, each with around 10,000 living human brain cells, wired into a biocomputing array in FinalSpark's Neuroplatform]

Four human brain organoids, each with around 10,000 living human brain cells, wired into a biocomputing array in FinalSpark's Neuroplatform

FinalSpark

We've since covered similar projects at Indiana University where researchers let the brain cells self-organize into a "three-dimensional ball-shaped "Brainware" organoid before poking electrodes into them and Swiss startup FinalSpark, which has started using dopamine as a reward mechanism for its Neuroplatform biocomputing chips.

If this is the first time you've heard about this brain-on-a-chip stuff, do pick your jaw up off the floor and read a few of those links this is absolutely staggering work. And now Chinese researchers say they're taking it to the next level.

The MetaBOC (BOC for brain-on-chip, of course) project brings together researchers from Tianjin University's Haihe Laboratory of Brain-Computer Interaction and Human-Computer Integration with other teams from the Southern University of Science and Technology.

[Image 11: Key components of brain-on-chip technologies, helpfully labelled in Chinese]

Key components of brain-on-chip technologies, helpfully labelled in Chinese

Tianjin University

It's an open-source piece of software designed to act as an interface between brain-on-a-chip biocomputers and other electronic devices, giving the brain organoid the ability to perceive the world through electronic signals, operate on it through whatever controls it's given access to, and learn to master certain tasks.

The Tianjin team says it's using ball-shaped organoids, much like the Brainware team at Indiana, since their three-dimensional physical structure allows them to form more complex neural connections, much like they do in our brains. These organoids are grown under low-intensity focused ultrasound stimulation

academic.oup.com, which the researchers say seems to give them a better intelligent foundation to build on.

The MetaBOC system also tries to meet intelligence with intelligence, using AI algorithms within the software to communicate with the brain cells' biological intelligence.

The Tianjin team specifically mentions robotics as an integration target, and provides the rather silly images above, as if deliberately trying to undermine the credibility of the work. A brain-on-a-chip

biocomputer, says the team, can now learn to drive a robot, figuring out the controls and attempting tasks like avoiding obstacles, tracking targets, or learning to use arms and hands to grasp various objects. \n\nBecause the brain organoid is only able to see the world through the electrical signals provided to it, it can theoretically train itself up on how to pilot its mini-gundam in a fully simulated environment, allowing it to get most of its falling and crashing out of the way without jeopardizing its fleshy intelligence engine. \n\n[Image 12: No, the organoids probably won't be that big to begin with. They will, however, require all sorts of support gear, including fluid and nutrient lines, anti-pathogenic seals, temperature-control and shock-proofing systems] \n\nNo, the organoids probably won't be that big to begin with. They will, however, require all sorts of support gear, including fluid and nutrient lines, anti-pathogenic seals, temperature-control and shock-proofing systems \n\nTianjin University\n\nNow, to be crystal clear, the fully exposed, pink lollipop-style brain organoids in the robot images above are mockups \u2013 demonstration diagrams of future application scenarios\u2013 rather than brain-controlled prototypes. Perhaps the image below, from Cortical Labs, is a better representation of what these kinds of brains on chips will look like in the real world.\n\n[Image 13: Cortical Labs\u2013 \u201cwetware,\u201c looking particularly wet after a test session] \n\nCortical Labs\u2013 \u201cwetware,\u201c looking particularly wet after a test session \n\nCortical Labs\n\nBut either way, if you built a small robot with appropriate sensing and motor capabilities, we see no reason why human brain cells couldn't soon be in there trying to get the hang of driving it. \n\nThis is a phenomenal time for science and technology, with projects like \u2013Neuralink\u2013 aiming to hook high-bandwidth computer interfaces straight into your brain, while projects like MetaBOC grow human brain cells into computers, and the surging AI industry attempts to overtake the best of biological intelligence with some strange facsimile built entirely in silicon. \n\nScience and tech are forced to get philosophical as they slam up against the limits of our understanding; are dish-brains conscious? Are AIs conscious? Both may conceivably end up being indistinguishable from sentient beings at some point in the near future. What are the ethics once that happens? Are they different for biological and silicon-based intelligences?\n\n\u2013Let's say,\u201c \u2013says Kagan in our extensive interview\u2013, \u2013that these systems do develop consciousness \u2013 in my opinion, very unlikely, but let's say it does happen. Then you need to decide, well, is it actually ethically right to test with them or not? Because we do test on conscious creatures. You know, we test on animals, which I think have a lev\u2013, \u201ctitle\u2013: \u2013Brain-in-a-jar\u2013; biocomputers can now learn to control robots\u2013, \u201ctether_id\u2013: null\u2013, \u2013status\u2013: \u2013finished_successfully\u2013, \u2013end_turn\u2013: null, \u2013weight\u2013: 0.0, \u2013metadata\u2013: {\u2013cite_metadata\u2013: {\u2013citation_format\u2013: {\u2013name\u2013: \u2013tether_og\u2013\u2013}, \u2013metadata_list\u2013: [{\u2013type\u2013: \u2013webpage\u2013, \u2013title\u2013: \u2013Brain-in-a-jar\u2013; biocomputers can now learn to control robots\u2013, \u2013url\u2013: \u2013https://newatlas.com/robotics/brain-organoid-robot/\u2013, \u2013text\u2013: \u2013\nMore importantly, they can learn. The first time we encountered the concept was in the \u2013DishBrain project\u2013 at Monash University, Australia. In what must've felt like a Dr. Frankenstein moment, researchers grew about 800,000 brain cells onto a chip, put it into a simulated environment, and watched this horrific cyborg abomination learn to play Pong within about five minutes. The project was quickly \u2013funded by the Australian military\u2013, and spun out into a company called Cortical Labs. \n\n[Image 9: Cortical Labs has prototyped computing modules built around human brain cells, and is looking to commercialize this hybrid

learning intelligence] \n\nCortical Labs has prototyped computing modules built around human brain cells, and is looking to commercialize this hybrid learning intelligence \n\nCortical Labs\n\nWhen \u301042\u2020we interviewed Cortical Labs's Chief Scientific Officer Brett Kagan\u3011, he told us that even at an early stage, human neuron-enhanced biocomputers appear to learn much faster, using much less power, than today's AI machine learning chips, while demonstrating "more intuition, insight and creativity." Our brains, after all, consume just a tiny 20 watts to run nature's most powerful necktop computers. \n\n"We've done tests against reinforcement learning," Kagan told us, "and we find that in terms of how quickly the number of samples the system has to see before it starts to show meaningful learning, it's chalk and cheese. The biological systems, even as basic and janky as they are right now, are still outperforming the best deep learning algorithms that people have generated. That's pretty wild." \n\nOne downside \u2013 apart from some clearly thorny ethics \u2013 is that the "wetware" components need to be kept alive. That means keeping them fed, watered, temperature-controlled and protected from germs and viruses. Cortical's record back in 2023 was about 12 months. \n\n[Image 10: Four human brain organoids, each with around 10,000 living human brain cells, wired into a biocomputing array in FinalSpark's Neuroplatform] \n\nFour human brain organoids, each with around 10,000 living human brain cells, wired into a biocomputing array in FinalSpark's Neuroplatform \n\nFinalSpark\n\nWe've since covered similar projects at Indiana University \u2013 where researchers let the brain cells self-organize into a \u301043\u2020three-dimensional ball-shaped "Brainware" organoid\u3011 before poking electrodes into them \u2013 and Swiss startup FinalSpark, which has \u301044\u2020started using dopamine as a reward mechanism for its Neuroplatform\u3011 biocomputing chips. \n\nIf this is the first time you've heard about this brain-on-a-chip stuff, do pick your jaw up off the floor and read a few of those links \u2013 this is absolutely staggering work. And now Chinese researchers say they're taking it to the next level. \n\nThe MetaBOC (BOC for brain-on-chip, of course) project brings together researchers from Tianjin University's Haihe Laboratory of Brain-Computer Interaction and Human-Computer Integration with other teams from the Southern University of Science and Technology. \n\n[Image 11: Key components of brain-on-chip technologies, helpfully labelled in Chinese] \n\nKey components of brain-on-chip technologies, helpfully labelled in Chinese \n\nTianjin University\n\nIt's an open-source piece of software designed to act as an interface between brain-on-a-chip biocomputers and other electronic devices, giving the brain organoid the ability to perceive the world through electronic signals, operate on it through whatever controls it's given access to, and learn to master certain tasks. \n\nThe Tianjin team says it's using ball-shaped organoids, much like the Brainware team at Indiana, since their three-dimensional physical structure allows them to form more complex neural connections, much like they do in our brains. These organoids are \u301045\u2020grown under low-intensity focused ultrasound stimulation\u2020academic.oup.com\u3011, which the researchers say seems to give them a better intelligent foundation to build on. \n\nThe MetaBOC system also tries to meet intelligence with intelligence, using AI algorithms within the software to communicate with the brain cells's biological intelligence. \n\nThe Tianjin team specifically mentions robotics as an integration target, and provides the rather silly images above, as if deliberately trying to undermine the credibility of the work. A brain-on-a-chip biocomputer, says the team, can now learn to drive a robot, figuring out the controls

and attempting tasks like avoiding obstacles, tracking targets, or learning to use arms and hands to grasp various objects. \n\nBecause the brain organoid is only able to 'see' the world through the electrical signals provided to it, it can theoretically train itself up on how to pilot its mini-gundam in a fully simulated environment, allowing it to get most of its falling and crashing out of the way without jeopardizing its fleshy intelligence engine. \n\n[Image 12: No, the organoids probably won't be that big to begin with. They will, however, require all sorts of support gear, including fluid and nutrient lines, anti-pathogenic seals, temperature-control and shock-proofing systems] \n\nNo, the organoids probably won't be that big to begin with. They will, however, require all sorts of support gear, including fluid and nutrient lines, anti-pathogenic seals, temperature-control and shock-proofing systems \n\nTianjin University\n\nNow, to be crystal clear, the fully exposed, pink lollipop-style brain organoids in the robot images above are mockups \u2013 "demonstration diagrams of future application scenarios" \u2013 rather than brain-controlled prototypes. Perhaps the image below, from Cortical Labs, is a better representation of what these kinds of brains on chips will look like in the real world.\n\n[Image 13: Cortical Labs' "wetware," looking particularly wet after a test session] \n\nCortical Labs' "wetware," looking particularly wet after a test session \n\nCortical Labs\n\nBut either way, if you built a small robot with appropriate sensing and motor capabilities, we see no reason why human brain cells couldn't soon be in there trying to get the hang of driving it. \n\nThis is a phenomenal time for science and technology, with projects like \u00301046\u2020Neuralink\u003011 aiming to hook high-bandwidth computer interfaces straight into your brain, while projects like MetaBOC grow human brain cells into computers, and the surging AI industry attempts to overtake the best of biological intelligence with some strange facsimile built entirely in silicon.\n\nScience and tech are forced to get philosophical as they slam up against the limits of our understanding; are dish-brains conscious? Are AIs conscious? Both may conceivably end up being indistinguishable from sentient beings at some point in the near future. What are the ethics once that happens? Are they different for biological and silicon-based intelligences?\n\n"Let's say," \u00301042\u2020says Kagan in our extensive interview\u003011, "that these systems do develop consciousness \u2013 in my opinion, very unlikely, but let's say it does happen. Then you need to decide, well, is it actually ethically right to test with them or not? Because we do test on conscious creatures. You know, we test on animals, which I think have a lev",\n\n"pub_date": null, "extra": null}], "original_query": null, "command": "mclick",\n\n"args": [\"[4, 13, 5, 8]\"], "status": "finished", "is_complete": true, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "parent_id": "ad89745c-c600-4672-b1b3-1c90ba082606", "request_id": "8c8efc4fcb400e2b-MXP", "timestamp": "absolute"}, "recipient": "all", "channel": null}, "parent": "ad89745c-c600-4672-b1b3-1c90ba082606", "children": [\"bb2c0d6c-0223-4a09-9eb5-33dcc80ee009\"]}, "bb2c0d6c-0223-4a09-9eb5-33dcc80ee009": {"id": "bb2c0d6c-0223-4a09-9eb5-33dcc80ee009", "message": {"id": "bb2c0d6c-0223-4a09-9eb5-33dcc80ee009", "author": {"role": "tool", "name": "brower", "metadata": {}}, "create_time": 1727308967.115006, "update_time": null, "content": {"content_type": "tether_quote", "url": "https://www.nature.com/articles/d41586-023-03975-7", "domain": "www.nature.com", "text": "\nNature 624, 481 (2023)\n\ndo: https://doi.org/10.1038/d41586-023-03975-7\n\n## References\n\n1. Cai, H. et al. Nature Electron.https://doi.org/10.1038/s41928-023-01069-w

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 Assistant/Associate/Professor\u3011\n\nAtlanta, Georgia\n\nEmory University\n\n[Image
 1] \n\n * ##### \u301050\u2020Editor (Quantum Physics and Quantum
 Technologies)\u3011\n\nThe Associate/Senior Editor role at Nature Communications is
 ideal for researchers who love science but feel that a career at the bench isn't
 enough. \n\nLondon or Madrid \u2014 hybrid working model\n\nSpringer Nature
 Ltd\n\n[Image 2] \n\n * ##### \u301051\u2020PhD position (all genders) in AI for
 biomedical data analysis\u3011\n\nPhD position (all genders) in AI for biomedical data
 analysis Part time \u2014 | \u2014 Temporary | Arbeitsort: Hamburg-Eppendorf UKE_Zentrum
 f\u2014 Molekulare Neu... \n\nHamburg (DE)\n\nUniversit\u2014tsklinikum Hamburg-
 Eppendorf\n\n[Image 3] \n\n * ##### \u301052\u2020Assistant Professor
 Position\u3011\n\nThe Lewis-Sigler Institute at Princeton University invites
 applications for a tenure-track faculty position at the Assistant Professor
 level. \n\nPrinceton University, Princeton, New Jersey, US\n\nThe Lewis-Sigler
 Institute for Integrative Genomics at Princeton University\n\n[Image 4] \n\n * #####
 \u301053\u2020Systems Biology Faculty Position\u3011\n\nWe seek tenure-track faculty
 candidates at the level of Assistant Professor with interests in microbial genetics,
 microbial physiology\n\nDallas, Texas\n\nLyda Hill Department of
 Bioinformatics\n\n[Image 5] \n\n\u301019\u2020 Access through your institution
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learn to operate controls within the simulated world, allowing them to perform tasks like avoiding obstacles or controlling robotic arms. Although these experiments are still in their early stages, they are showing that **bio-computing systems** can exhibit learning capabilities that surpass traditional AI in certain contexts.

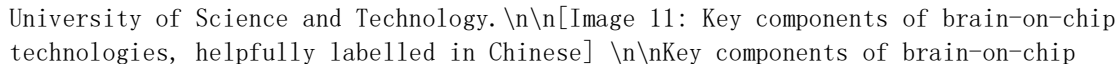
These bio-processors require special care, like providing nutrients and maintaining temperature control, to keep the living brain cells alive. While it's still far from building fully functional brain-powered robots, the research is opening up fascinating possibilities for the future of **biocomputing**.

It's an exciting time for science as we explore the intersection of biology and technology! Let me know if you'd like to explore this topic further."}], "status": "finished_successfully", "end_turn": true, "weight": 1.0, "metadata": {"citations": [{"start_ix": 1237, "end_ix": 1248, "citation_format_type": "tether_og", "metadata": {"type": "webpage", "title": "MetaBOC: The Future of Brain-Computer Interaction and Biocomputing \u2013 Impact Lab", "url": "https://www.impactlab.com/2024/07/04/metaboc-the-future-of-brain-computer-interaction-and-biocomputing/", "text": "\nIt's important to note that the exposed brain organoids in the robot images are mockups intended to illustrate future applications, rather than actual brain-controlled prototypes. A more realistic representation of these biocomputers is provided by images from Cortical Labs, showing what these brain-on-chip systems might look like in practical use.\n\nBy Impact Lab\n\n## Post navigation\n\n\u2013 Previous post World's Largest Solar.. \u2013 Next post Breakthrough Gel-Based Material.. \u2013\n\n[Image 4: Thomas Frey Futurist Futurati Podcasts][Image 5: Thomas Frey Futurist Futurati Podcasts][Image 6: Book Thomas Frey Futurist][Image 7: Book Thomas Frey Futurist] Search for:\n\n##### Categories \n\nCategories Select Category 2019 CES 2019 Predictions 2020 Predictions 2021 Predictions 2022 CES 2022 predictions 2023 CES 3D Printer 6G Advertising Agriculture AI Airbnb Airbus Alternative Transportation Alzheimer's Disease Amazon.com Analysis Animals App Apple Architecture Art Artificial Intelligence Atomic Clock Augmented Reality Automation Automobiles Aviation Award Winner Baby Gadgets Banking Batteries Battery Beauty Beer bicycle Big Data Big Problems Bill Gates Biotech Birth Bitcoin Blockchain bluetooth body antenna Boeing Botnet Brain brain hacking brain malware brain-computer interfaces brains Breakthrough Thinking Business Camping Cancer CES 2018 CES 2020 CES 2021 Children China CIA Cinema Citibank City Planning Climate Change Clothing Co Working Coding Coding Schools communication Computer Security Cooking Coronavirus Corporate Manipulation Coworking Crazy Photos Crazy Stuff Credit Crime Crime Prevention Crypto Currency Crypto-Technology Culture Current Events cutting edge DARPA Dating DaVinci Coders DaVinci Institute DaVinci Inventor Showcase DDoS DIY DNA Driverless cars Driverless vehicles Drone drones Ecological Products Economy Education Electric Automobile Electric Vehicles Elon Musk Employment Energy Engineering Entertainment Environment facebook Famous Inventor Farming Farms Fashion Film Films Finance Food Ford Motor Company Futurati Podcast Future Futurist Game Development Games Genes Genetics Ghost Children Global Warming Globalism Google government Great New Product Great Videos Green Friendly Hackers Hacking Health Health & Fitness Healthcare Higher Education Historical Perspectives Home Technology Hot Issues Housing Human Behavior Humor Hyperloop IBM IBM Watson Ideas Insects Insurance Intellectual Property Intelligence Internet Internet of Things Inventions Jet Latest News Latest Trend Law Enforcement LED Legal Issues Legalized marijuana Life Skills Lifestyle Machine Learning Marketing

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 "'Brain-in-a-jar': biocomputers can now learn to control robots", "url":
 "https://newatlas.com/robotics/brain-organoid-robot/", "text": "\nMore importantly,
 they can learn. The first time we encountered the concept was in the
 \u301040\u2020DishBrain project\u3011 at Monash University, Australia. In what
 must've felt like a Dr. Frankenstein moment, researchers grew about 800,000 brain
 cells onto a chip, put it into a simulated environment, and watched this horrific
 cyborg abomination learn to play Pong within about five minutes. The project was
 quickly \u301041\u2020funded by the Australian military\u3011, and spun out into a
 company called Cortical Labs. \n\n[Image 9: Cortical Labs has prototyped computing
 modules built around human brain cells, and is looking to commercialize this hybrid
 learning intelligence] \n\nCortical Labs has prototyped computing modules built around
 human brain cells, and is looking to commercialize this hybrid learning intelligence
 \n\nCortical Labs\n\nWhen \u301042\u2020we interviewed Cortical Labs' Chief
 Scientific Officer Brett Kagan\u3011, he told us that even at an early stage, human
 neuron-enhanced biocomputers appear to learn much faster, using much less power, than
 today's AI machine learning chips, while demonstrating "more intuition,
 insight and creativity." Our brains, after all, consume just a tiny 20 watts to
 run nature's most powerful necktop computers. \n\n"We've done tests
 against reinforcement learning," Kagan told us, "and we find that in terms
 of how quickly the number of samples the system has to see before it starts to show
 meaningful learning, it's chalk and cheese. The biological systems, even as basic
 and janky as they are right now, are still outperforming the best deep learning
 algorithms that people have generated. That's pretty wild."\n\nOne downside
 \u2013 apart from some clearly thorny ethics \u2013 is that the "wetware"
 components need to be kept alive. That means keeping them fed, watered, temperature-
 controlled and protected from germs and viruses. Cortical's record back in 2023
 was about 12 months. \n\n[Image 10: Four human brain organoids, each with around
 10,000 living human brain cells, wired into a biocomputing array in FinalSpark' s
 Neuroplatform] \n\nFour human brain organoids, each with around 10,000 living human
 brain cells, wired into a biocomputing array in FinalSpark' s Neuroplatform
 \n\nFinalSpark\n\nWe've since covered similar projects at Indiana University
 \u2013 where researchers let the brain cells self-organize into a \u301043\u2020three-
 dimensional ball-shaped "Brainware" organoid\u3011 before poking electrodes
 into them \u2013 and Swiss startup FinalSpark, which has \u301044\u2020started using
 dopamine as a reward mechanism for its Neuroplatform\u3011 biocomputing chips. \n\nIf
 this is the first time you've heard about this brain-on-a-chip stuff, do pick
 your jaw up off the floor and read a few of those links \u2013 this is absolutely
 staggering work. And now Chinese researchers say they're taking it to the next
 level. \n\nThe MetaBOC (BOC for brain-on-chip, of course) project brings together
 researchers from Tianjin University's Haihe Laboratory of Brain-Computer

Interaction and Human-Computer Integration with other teams from the Southern University of Science and Technology.

 Key components of brain-on-chip technologies, helpfully labelled in Chinese

Tianjin University

It's an open-source piece of software designed to act as an interface between brain-on-a-chip biocomputers and other electronic devices, giving the brain organoid the ability to perceive the world through electronic signals, operate on it through whatever controls it's given access to, and learn to master certain tasks.

The Tianjin team says it's using ball-shaped organoids, much like the Brainware team at Indiana, since their three-dimensional physical structure allows them to form more complex neural connections, much like they do in our brains. These organoids are

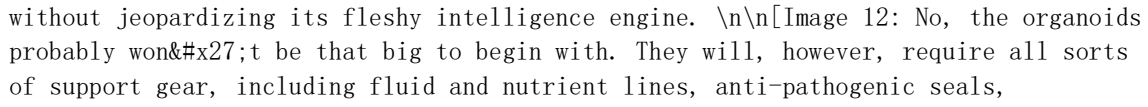
grown under low-intensity focused ultrasound stimulation

academic.oup.com, which the researchers say seems to give them a better intelligent foundation to build on.

The MetaBOC system also tries to meet intelligence with intelligence, using AI algorithms within the software to communicate with the brain cells' biological intelligence.

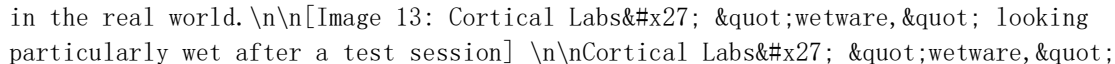
The Tianjin team specifically mentions robotics as an integration target, and provides the rather silly images above, as if deliberately trying to undermine the credibility of the work. A brain-on-a-chip biocomputer, says the team, can now learn to drive a robot, figuring out the controls and attempting tasks like avoiding obstacles, tracking targets, or learning to use arms and hands to grasp various objects.

Because the brain organoid is only able to 'see' the world through the electrical signals provided to it, it can theoretically train itself up on how to pilot its mini-gundam in a fully simulated environment, allowing it to get most of its falling and crashing out of the way without jeopardizing its fleshy intelligence engine.

 No, the organoids probably won't be that big to begin with. They will, however, require all sorts of support gear, including fluid and nutrient lines, anti-pathogenic seals, temperature-control and shock-proofing systems

Tianjin University

Now, to be crystal clear, the fully exposed, pink lollipop-style brain organoids in the robot images above are mockups 'demonstration diagrams of future application scenarios' rather than brain-controlled prototypes. Perhaps the image below, from Cortical Labs, is a better representation of what these kinds of brains on chips will look like in the real world.

 Cortical Labs' 'wetware,' looking particularly wet after a test session

Cortical Labs

But either way, if you built a small robot with appropriate sensing and motor capabilities, we see no reason why human brain cells couldn't soon be in there trying to get the hang of driving it.

This is a phenomenal time for science and technology, with projects like Neuralink aiming to hook high-bandwidth computer interfaces straight into your brain, while projects like MetaBOC grow human brain cells into computers, and the surging AI industry attempts to overtake the best of biological intelligence with some strange facsimile built entirely in silicon.

Science and tech are forced to get philosophical as they slam up against the limits of our understanding; are dish-brains conscious? Are AIs conscious? Both may conceivably end up being indistinguishable from sentient beings at some point in the near future. What are the ethics once that happens? Are they different for biological and silicon-based

intelligences?" "Let's say," says Kagan in our extensive interview, "that these systems do develop consciousness in my opinion, very unlikely, but let's say it does happen. Then you need to decide, well, is it actually ethically right to test with them or not? Because we do test on conscious creatures. You know, we test on animals, which I think have a level,"

"pub_date": null, "extra": {"cited_message_idx": 93, "search_result_idx": null, "evidence_text": "source", "cloud_doc_url": null}}, {"start_ix": 1566, "end_ix": 1577, "citation_format_type": "tether_og", "metadata": {"type": "webpage", "title": "\u0026BIOCOMPUTER\u0026 combines lab-grown brain tissue with electronic hardware", "url": "https://www.nature.com/articles/d41586-023-03975-7", "text": "\u0026Nature 624, 481 (2023)\u0026doi: https://doi.org/10.1038/d41586-023-03975-7\u0026\u0026\u0026 References\u0026\u0026\u0026 1. Cai, H. et al. Nature Electron.https://doi.org/10.1038/s41928-023-01069-w (2023). \u0026\u0026\u0026Article\u0026doi.org\u0026\u0026\u0026 \u0026\u0026\u0026 Google Scholar\u0026scholar.google.com\u0026\u0026\u0026\u0026\u0026\u0026Download references\u0026citation-needed.springer.com\u0026\u0026\u0026\u0026\u0026\u0026Reprints and permissions\u0026s100.copyright.com\u0026\u0026\u0026\u0026\u0026\u0026 Related Articles\u0026\u0026\u0026\u0026\u0026\u0026 * \u0026\u0026\u0026\u0026\u0026 Neanderthal-like \u0026mini-brains\u0026 created in lab with CRISPR \u0026\u0026\u0026\u0026\u0026 * \u0026\u0026\u0026\u0026\u0026 The boom in mini stomachs, brains, breasts, kidneys and more \u0026\u0026\u0026\u0026\u0026 * \u0026\u0026\u0026\u0026\u0026 The mini lungs and other organoids helping to beat COVID \u0026\u0026\u0026\u0026\u0026 * \u0026\u0026\u0026\u0026\u0026 Organoids open fresh paths to biomedical advances \u0026\u0026\u0026\u0026\u0026 * \u0026\u0026\u0026\u0026\u0026 Lab-grown \u0026mini brains\u0026 produce electrical patterns that resemble those of premature babies \u0026\u0026\u0026\u0026\u0026 Subjects\u0026\u0026\u0026\u0026\u0026 * \u0026\u0026\u0026\u0026\u0026 Mathematics and computing\u0026\u0026\u0026\u0026\u0026 * \u0026\u0026\u0026\u0026\u0026 Machine learning\u0026\u0026\u0026\u0026\u0026 * \u0026\u0026\u0026\u0026\u0026 Brain\u0026\u0026\u0026\u0026\u0026 Latest on:\u0026\u0026\u0026\u0026\u0026 Mathematics and computing\u0026\u0026\u0026\u0026\u0026 Bigger AI chatbots more inclined to spew nonsense \u0026\u0026\u0026\u0026\u0026 and people don\u0026\u0026\u0026\u0026\u0026 always realize News 25 SEP 24 \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 Larger and more instructable language models become less reliable Article 25 SEP 24 \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 Bendable non-silicon RISC-V microprocessor Article 25 SEP 24 \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 Machine learning\u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 How a \u0026pain-o-meter\u0026 could improve treatments Outlook 25 SEP 24 \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 Could biomarkers mean better pain treatment? 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News Feature 25 SEP 24 \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 [Image 0: Nature Careers] \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 Jobs \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 * ##### \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 Faculty Position - Open Rank - Assistant/Associate/Professor\u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 Atlanta, Georgia\u0026\u0026\u0026\u0026\u0026 Emory University\u0026\u0026\u0026\u0026\u0026 [Image 1] \u0026\u0026\u0026\u0026\u0026 * ##### \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 Editor (Quantum Physics and Quantum Technologies)\u0026\u0026\u0026\u0026\u0026 The Associate/Senior Editor role at Nature Communications is ideal for researchers who love science but feel that a career at the bench isn\u0026\u0026\u0026\u0026\u0026 enough. \u0026\u0026\u0026\u0026\u0026 London or Madrid \u0026\u0026\u0026\u0026\u0026 hybrid working model\u0026\u0026\u0026\u0026\u0026 Springer Nature Ltd\u0026\u0026\u0026\u0026\u0026 [Image 2] \u0026\u0026\u0026\u0026\u0026 * ##### \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 PhD position (all genders) in AI for biomedical data analysis\u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 PhD position (all genders) in AI for biomedical data analysis Part time\u0026\u0026\u0026\u0026\u0026 | \u0026\u0026\u0026\u0026\u0026 Temporary | Arbeitsort: Hamburg-Eppendorf UKE_Zentrum f\u0026\u0026\u0026\u0026\u0026 Molekulare Neu... \u0026\u0026\u0026\u0026\u0026 Hamburg (DE)\u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 Universit\u0026\u0026\u0026\u0026\u0026 tschlinikum Hamburg-Eppendorf\u0026\u0026\u0026\u0026\u0026 [Image 3] \u0026\u0026\u0026\u0026\u0026 * ##### \u0026\u0026\u0026\u0026\u0026 \u0026\u0026\u0026\u0026\u0026 Assistant Professor Position\u0026\u0026\u0026\u0026\u0026 The Lewis-Sigler Institute at Princeton University invites applications for a tenure-track faculty position at the Assistant Professor

level.\n\nPrinceton University, Princeton, New Jersey, US\n\nThe Lewis-Sigler
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1237, "end_idx": 1248, "alt": null, "type": "webpage_extended", "title": "MetaBOC: The Future of Brain-Computer Interaction and Biocomputing \u2013 Impact Lab", "url": "https://www.impactlab.com/2024/07/04/metaboc-the-future-of-brain-computer-interaction-and-biocomputing/", "pub_date": null, "snippet": "\nIt\u2019s important to note that the exposed brain organoids in the robot images are mockups intended to illustrate future applications, rather than actual brain-controlled prototypes. A more realistic representation of these biocomputers is provided by images from Cortical Labs, showing what these brain-on-chip systems might look like in practical use.\n\nBy Impact Lab\n\n## Post navigation\n\n\u2013 \u2013 Previous post World\u2019s Largest Solar.. \u2013 \u2013 Next post Breakthrough Gel-Based Material.. \u2013 \u2013 \n\n [Image 4: Thomas Frey Futurist Futurati Podcasts][Image 5: Thomas Frey Futurist Futurati Podcasts][Image 6: Book Thomas Frey Futurist][Image 7: Book Thomas Frey Futurist] Search for:\n\n##### Categories \n\nCategories Select Category 2019 CES 2019 Predictions 2020 Predictions 2021 Predictions 2022 CES 2022 predictions 2023 CES 3D Printer 6G Advertising Agriculture AI Airbnb Airbus Alternative Transportation Alzheimer\u2019s Disease Amazon.com Analysis Animals App Apple Architecture Art Artificial Intelligence Atomic Clock Augmented Reality Automation Automobiles Aviation Award Winner Baby Gadgets Banking Batteries Battery Beauty Beer bicycle Big Data Big Problems Bill Gates Biotech Birth Bitcoin Blockchain bluetooth body antenna Boeing Botnet Brain brain hacking brain malware brain-computer interfaces brains Breakthrough Thinking Business Camping Cancer CES 2018 CES 2020 CES 2021 Children China CIA Cinema Citibank City Planning Climate Change Clothing Co Working Coding Coding Schools communication Computer Security Cooking Coronavirus Corporate Manipulation Coworking Crazy Photos Crazy Stuff Credit Crime Crime Prevention Crypto Currency Crypto-Technology Culture Current Events cutting edge DARPA Dating DaVinci Coders DaVinci Institute DaVinci Inventor Showcase DDoS DIY DNA Driverless cars Driverless vehicles Drone drones Ecological Products Economy Education Electric Automobile Electric Vehicles Elon Musk Employment Energy Engineering Entertainment Environment facebook Famous Inventor Farming Farms Fashion Film Films Finance Food Ford Motor Company Futurati Podcast Future Futurist Game Development Games Genes Genetics Ghost Children Global Warming Globalism Google government Great New Product Great Videos Green Friendly Hackers Hacking Health Health & Fitness Healthcare Higher Education Historical Perspectives Home Technology Hot Issues Housing Human Behavior Humor Hyperloop IBM IBM Watson Ideas Insects Insurance Intellectual Property Intelligence Internet Internet of Things Inventions Jet Latest News Latest Trend Law Enforcement LED Legal Issues Legalized marijuana Life Skills Lifestyle Machine Learning Marketing Mass Transit Medical Breakthrough Medicine Memory Metaverse Microsoft Military military drones mobile apps mobile technology Money Talk Movies Music Nanotechnology NASA Netflix New Discoveries New Inventions new technology New Viewpoints Parenting Patents People Making a Difference Photo Perspectives Plant Life privacy Programming quantum computing Racing Record Breaker Recycling Report Robotics Robots Science & Technology News Science Fiction Seaside security Segway Self-driving Cars Shopping Social Media Software Development Solar Energy Solar Power Space Space Flight SpaceX Spirituality sports Star Trek Star Wars Startup Stem cells subliminal messages Technological Unemployment Terrorism Tesla Textiles Tiny House Tom Frey top 10 Top 25 Inventions of 2017 Tourism Transportation Travel Travel Trending Twitter Uber Uncategorized United Parcel Service Upcoming Events UPS Venture Capital Video Video Games Virtual Reality Volvo VR Weapons Wearables Weather Wi-Fi Wind Power women YouTube \n\n##### Recent Posts\n\n * \u2013 \u2013 Revolutionizing Data Storage:

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cells onto a chip, put it into a simulated environment, and watched this horrific cyborg abomination learn to play Pong within about five minutes. The project was quickly [funded](#) by the Australian military, and spun out into a company called Cortical Labs.  Cortical Labs has prototyped computing modules built around human brain cells, and is looking to commercialize this hybrid learning intelligence

Cortical Labs

When [we](#) interviewed Cortical Labs' Chief Scientific Officer Brett Kagan, he told us that even at an early stage, human neuron-enhanced biocomputers appear to learn much faster, using much less power, than today's AI machine learning chips, while demonstrating "more intuition, insight and creativity." Our brains, after all, consume just a tiny 20 watts to run nature's most powerful necktop computers. "We've done tests against reinforcement learning," Kagan told us, "and we find that in terms of how quickly the number of samples the system has to see before it starts to show meaningful learning, it's chalk and cheese. The biological systems, even as basic and janky as they are right now, are still outperforming the best deep learning algorithms that people have generated. That's pretty wild."

One downside [apart](#) from some clearly thorny ethics is that the "wetware" components need to be kept alive. That means keeping them fed, watered, temperature-controlled and protected from germs and viruses. Cortical's record back in 2023 was about 12 months.  Four human brain organoids, each with around 10,000 living human brain cells, wired into a biocomputing array in FinalSpark's Neuroplatform

FinalSpark

We've since covered similar projects at Indiana University [where](#) researchers let the brain cells self-organize into a [three-dimensional ball-shaped "Brainware" organoid](#) before poking electrodes into them [and](#) Swiss startup FinalSpark, which has [started](#) using dopamine as a reward mechanism for its Neuroplatform biocomputing chips. If this is the first time you've heard about this brain-on-a-chip stuff, do pick your jaw up off the floor and read a few of those links [this](#) is absolutely staggering work. And now Chinese researchers say they're taking it to the next level. The MetaBOC (BOC for brain-on-chip, of course) project brings together researchers from Tianjin University's Haihe Laboratory of Brain-Computer Interaction and Human-Computer Integration with other teams from the Southern University of Science and Technology.  Key components of brain-on-chip technologies, helpfully labelled in Chinese

Tianjin University

It's an open-source piece of software designed to act as an interface between brain-on-a-chip biocomputers and other electronic devices, giving the brain organoid the ability to perceive the world through electronic signals, operate on it through whatever controls it's given access to, and learn to master certain tasks. The Tianjin team says it's using ball-shaped organoids, much like the Brainware team at Indiana, since their three-dimensional physical structure allows them to form more complex neural connections, much like they do in our brains. These organoids are [grown](#) under low-intensity focused ultrasound stimulation [academic.oup.com](#), which the researchers say seems to give them a better intelligent foundation to build on. The MetaBOC system also tries to meet

intelligence with intelligence, using AI algorithms within the software to communicate with the brain cells' biological intelligence. \n\nThe Tianjin team specifically mentions robotics as an integration target, and provides the rather silly images above, as if deliberately trying to undermine the credibility of the work. A brain-on-a-chip biocomputer, says the team, can now learn to drive a robot, figuring out the controls and attempting tasks like avoiding obstacles, tracking targets, or learning to use arms and hands to grasp various objects. \n\nBecause the brain organoid is only able to 'see' the world through the electrical signals provided to it, it can theoretically train itself up on how to pilot its mini-gundam in a fully simulated environment, allowing it to get most of its falling and crashing out of the way without jeopardizing its fleshy intelligence engine. \n\n[Image 12: No, the organoids probably won't be that big to begin with. They will, however, require all sorts of support gear, including fluid and nutrient lines, anti-pathogenic seals, temperature-control and shock-proofing systems] \n\nNo, the organoids probably won't be that big to begin with. They will, however, require all sorts of support gear, including fluid and nutrient lines, anti-pathogenic seals, temperature-control and shock-proofing systems \n\nTianjin University\n\nNow, to be crystal clear, the fully exposed, pink lollipop-style brain organoids in the robot images above are mockups \u2013 "demonstration diagrams of future application scenarios" \u2013 rather than brain-controlled prototypes. Perhaps the image below, from Cortical Labs, is a better representation of what these kinds of brains on chips will look like in the real world. \n\n[Image 13: Cortical Labs' "wetware," looking particularly wet after a test session] \n\nCortical Labs' "wetware," looking particularly wet after a test session \n\nCortical Labs\n\nBut either way, if you built a small robot with appropriate sensing and motor capabilities, we see no reason why human brain cells couldn't soon be in there trying to get the hang of driving it. \n\nThis is a phenomenal time for science and technology, with projects like \u0046\u2020Neuralink\u0046\u2020 aiming to hook high-bandwidth computer interfaces straight into your brain, while projects like MetaBOC grow human brain cells into computers, and the surging AI industry attempts to overtake the best of biological intelligence with some strange facsimile built entirely in silicon. \n\nScience and tech are forced to get philosophical as they slam up against the limits of our understanding; are dish-brains conscious? Are AIs conscious? Both may conceivably end up being indistinguishable from sentient beings at some point in the near future. What are the ethics once that happens? Are they different for biological and silicon-based intelligences?\n\n"Let's say," \u0046\u2020says Kagan in our extensive interview\u0046\u2020, "that these systems do develop consciousness \u2013 in my opinion, very unlikely, but let's say it does happen. Then you need to decide, well, is it actually ethically right to test with them or not? Because we do test on conscious creatures. You know, we test on animals, which I think have a lev"},

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eat rosemary** and **potatoes** in moderation, but with some important
guidelines:\n\n### Rosemary:\n- **Safe for dogs**: Rosemary is safe for dogs in small
amounts. It is often used as a natural preservative in dog foods and can have
antioxidant properties.\n- **Benefits**: Rosemary may help improve digestion and has
antimicrobial properties that could benefit your dog's overall health.\n-
**Caution**: Some dogs may have sensitivities, and large amounts could potentially
cause digestive upset. Always start with small quantities.\n\n### Potatoes:\n-
**Cooked potatoes are generally safe**: Dogs can eat cooked, plain potatoes in
moderation. Potatoes provide vitamins and fiber, but they should not be seasoned with
butter, salt, or harmful spices (like garlic or onion).\n- **Avoid raw potatoes**: Raw
potatoes, especially those with green spots or sprouted areas, contain **solanine**, a
toxin that can be harmful to dogs.\n- **Mashed potatoes**: These are fine as long as
they don't contain added ingredients like butter, milk, garlic, or onion.\n\nAs
always, it's best to consult with your vet before introducing new foods into your
dog's diet to ensure they're safe and healthy for your pet."}], "status":
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tasty meal for your dog! A **turkey burger** and **potatoes** can be safe for dogs
with a few considerations:\n\n### Turkey Burger:\n- **Plain, cooked turkey** (without
seasoning) is a great source of protein for dogs. It's lean and full of nutrients
like iron, zinc, and B vitamins.\n- **Avoid additives**: Make sure the burger
doesn't contain ingredients harmful to dogs, like **onion, garlic, salt, or
spices**. These can cause stomach upset or, in larger amounts, toxicity.\n\n\n###
Potatoes:\n- As mentioned earlier, **cooked potatoes** are safe for dogs as long as
they're plain (no butter, seasoning, or harmful ingredients).\n\n\nAs long as the
turkey and potatoes were cooked plain, without harmful additives, your dog should be
able to enjoy that meal. It's a healthy balance of protein and carbohydrates for
your pup!"]}}, "status": "finished_successfully", "end_turn": true
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92-page nonbinding document, which outlines the Democratic National Committee's priorities for the next four years, will be voted on by delegates at the party's national convention on Monday.

5 DNC Party Platform's Five Key Takeaways - Newsweek
www.newsweek.com/ahead-of-the-democratic-national-convention-starting-monday-democrats-have-released-their-party-platform-in-a-92-page-document-outlining-their-policy-priorities-in-several-key-areas-the-platform-5

6 Five things that stand out in the Democratic Party platform
www.washingtonexaminer.com/the-washington-examiner-reviews-the-92-page-document-released-by-the-democrats-before-their-convention-in-chicago-where-they-nominated-kamala-harris-as-their-presidential-candidate-the-platform-6

7 2024 Party Platform Comparison - FRC Action
downloads.frcaction.org/compare-the-republican-and-democratic-platforms-on-life-marriage-and-family-issues-for-the-2020-and-2024-elections-see-how-each-party-supports-or-opposes-abortion-lgbtq-rights-religious-liberty-and-more-7

8 Democratic party 2024 platform makes one thing clear: We're not Trump
www.politico.com/the-democratic-party-2019s-platform-for-the-next-four-years-we-re-not-donald-trump-the-democratic-national-committee-is-poised-to-take-up-a-draft-of-its-2024-platform-proposal-a-sweeping-set-8

9 Party Platform Comparisons - FRC Action
www.frcaction.org/compare-the-values-and-policies-of-the-republican-and-democratic-parties-based-on-their-2020-to-2024-platforms-see-how-the-2024-republican-platform-differs-from-its-previous-versions-and-learn-how-elected-officials-vote-in-line-with-their-party-s-platform-9

10 Comparison of the Republican and Democratic Party Platforms on Key Issues
diolc.org/this-web-page-provides-excerpts-from-the-2020-party-platforms-on-human-life-education-health-care-foreign-aid-and-more-it-also-includes-links-to-the-full-platforms-and-a-nonpartisan-guide-to-help-voters-compare-the-parties-positions-10

11 DNC Releases 2024 Party Platform to be Voted on at Convention
democrats.org/the-democratic-national-committee-dnc-released-the-final-2024-democratic-party-platform-which-will-be-voted-on-by-delegates-at-the-convention-the-platform-reflects-the-diverse-perspectives-and-unifying-values-of-the-democratic-party-and-contrasts-with-donald-trump-s-extreme-agenda-11

12 The Democratic Party platform. - Tangle
www.readtangle.com/today-s-topic-the-dnc-platform-on-sunday-the-democratic-national-committee-dnc-released-the-party-2019s-2024-platform-in-a-press-release-the-dnc-noted-that-the-platform-had-been-passed-on-july-16-prior-to-president-joe-biden-2019s-exit-from-the-presidential-race-but-that-the-document-12

13 makes a strong statement about the historic work that President Biden and Vice President Harris have
side-by-side.com/2024-presidential-election-2024election.procon.org/compare-the-positions-of-kamala-harris-chase-oliver-jill-stein-and-donald-trump-on-various-issues-for-the-2024-presidential-election-see-their-statements-biographies-and-sources-on-topics-such-as-legal-abortion-artificial-intelligence-universal-healthcare-and-more-13

14 Side-by-Side Comparison Chart - 2024 Presidential Election
2024election.procon.org/compare-the-positions-of-kamala-harris-chase-oliver-jill-stein-and-donald-trump-on-various-issues-for-the-2024-presidential-election-see-their-statements-biographies-and-sources-on-topics-such-as-legal-abortion-artificial-intelligence-universal-healthcare-and-more-14

15 What Does the Official 2024 Democratic Party Platform Say about
www.americanmanufacturing.org/regardless-the-document-is-the-democratic-party-2019s-official-policy-platform-so-it-2019s-worth-paying-attention-to-especially-because-it-does-include-a-strong-emphasis-on-manufacturing-issues-in-fact-both-infrastructure-investment-and-manufacturing-growth-appear-right-at-the-start-of-chapter-one-in-the-document-which-focuses-on-the-economy-15

16 Regardless, the document is the Democratic party's official policy platform, so it's worth paying attention to, especially because it does include a strong emphasis on manufacturing issues. In fact, both infrastructure investment and manufacturing growth appear right at the start of Chapter One in the document, which focuses on the economy.

\u301018\u2020Where we stand - Democrats\u2020democrats.org\u3011\nLearn about the Democratic Party's values and policy priorities, as detailed in the party platform adopted at each national convention. Find out how Democrats are fighting for a better America on health care, economy, diversity, and democracy.\n#\n\u301019\u2020Platform approved by Democrats still mentions Biden's second term;\n\u2020www.pbs.org\u3011\nThe party platform, passed before Biden endorsed Harris, still mentions his "second term" and his administration's achievements. It also outlines a progressive agenda for the next four years, but ... \nVisible: 0% - 100%", "summary": null, "assets": [], "tether_id": null}, "status": "finished_successfully", "end_turn": null, "weight": 0.0, "metadata": {"_cite_metadata": {"citation_format": {"name": "tether_og"}, "metadata_list": [{"type": "webpage", "title": "FINAL MASTER PLATFORM", "url": "https://democrats.org/wp-content/uploads/2024/08/FINAL-MASTER-PLATFORM.pdf", "text": "\nRead the final master platform of the Democratic Party for the 2024 presidential election. It outlines the achievements, values, and vision of President Biden, Vice President Harris, and Democrats on various issues such as economy, health care, climate, and democracy.\n", "pub_date": "2024-08-31T12:04:00.0000000Z", "extra": null}, {"type": "webpage", "title": "2024 Democratic Party Platform - The American Presidency Project", "url": "https://www.presidency.ucsb.edu/documents/2024-democratic-party-platform", "text": "\nRead the official platform of the Democratic Party for the 2024 presidential election, adopted at the national convention in Chicago. The platform outlines the party's vision, values, and priorities on various issues, such as economy, health care, climate, gun safety, democracy, and more.\n", "pub_date": "2024-09-24T02:04:00.0000000Z", "extra": null}, {"type": "webpage", "title": "The Democratic Party Platform, 2024 - Ballotpedia", "url": "https://ballotpedia.org/The_Democratic_Party_Platform,_2024", "text": "\nThe Democratic National Committee adopted a platform in August 2024 that focused on priorities for Democrats up and down the ballot, from growing the economy to securing American leadership worldwide. The platform was drafted and approved before Joe Biden withdrew from the presidential race and mentioned his second term.\n", "pub_date": "2024-09-23T12:44:00.0000000Z", "extra": null}, {"type": "webpage", "title": "A Comparison of the 2024 Republican and Democratic Party Platforms", "url": "https://www.frc.org/op-eds/a-comparison-of-the-2024-republican-and-democratic-party-platforms", "text": "\nA Brief Comparison of 2024 Republican and Democrat Platforms . Republicans. Democrats. Life. Weakly pro-life: leaves abortion up to the states, cites the overturn of Roe v. Wade, disallows third-trimester abortions. Vocally and unequivocally allows for abortion under any circumstances\n", "pub_date": "2024-09-24T03:27:00.0000000Z", "extra": null}, {"type": "webpage", "title": "Democratic Party Platform Centers Women's Rights", "url": "https://msmagazine.com/2024/08/22/democratic-party-platform-kamala-harris-policies/", "text": "\nAt the Democratic National Convention in Chicago, party leaders approved the 2024 platform Monday evening, promising to protect and strengthen women's rights. The 91-page document is a stark contrast to the Republican platform, which promises to continue the dismantling of women's rights started during Donald Trump's first term in office.\n", "pub_date": "2024-09-24T16:50:00.0000000Z", "extra": null}, {"type": "webpage", "title": "Party Platform - Democrats", "url": "https://democrats.org/where-we-stand/party-platform/", "text": "\nThe Democratic Party platform outlines its vision for America and the world, covering topics such as health care, economy, justice, climate, democracy, and more. Download the PDF or read

the preamble to learn about the party's values and goals for 2024.\n", "pub_date": "2024-09-24T06:02:00.000000Z", "extra": null}, {"type": "webpage", "title": "DNC Releases 2024 Party Platform Draft, Outlining Historic ... - Democrats", "url": "https://democrats.org/news/dnc-releases-2024-party-platform-draft-outlining-historic-record-and-bold-agenda-for-president-biden-and-vice-president-harris-to-finish-the-job/", "text": "\n\nThe draft platform features the achievements of the Biden-Harris administration and a progressive vision for the next four years. It contrasts with the RNC platform, which is based on Trump's Project 2025 agenda to strip away Americans' freedoms and dismantle democracy.\n", "pub_date": "2024-09-23T17:47:00.000000Z", "extra": null}, {"type": "webpage", "title": "The 2024 Democratic Party platform features a lot of Joe Biden, and a ...", "url": "https://news.yahoo.com/news/2024-democratic-party-platform-features-030415392.html", "text": "\n\nThe Democratic Party's 2019s proposed platform, released Sunday on the eve of the Chicago convention, is full of contrasts between former President Donald Trump and the old Democratic nominee.. The 92-page nonbinding document, which outlines the Democratic National Committee's 2019s priorities for the next four years, will be voted on by delegates at the party's 2019s national convention on Monday.\n", "pub_date": "2024-09-20T03:09:00.000000Z", "extra": null}, {"type": "webpage", "title": "DNC Party Platform's Five Key Takeaways - Newsweek", "url": "https://www.newsweek.com/dnc-party-platform-takeaways-2024-1940984", "text": "\n\nAhead of the Democratic National Convention starting Monday, Democrats have released their party platform in a 92-page document outlining their policy priorities in several key areas.The platform ...\n", "pub_date": "2024-09-24T12:17:00.000000Z", "extra": null}, {"type": "webpage", "title": "Five things that stand out in the Democratic Party platform", "url": "https://www.washingtonexaminer.com/news/campaigns/presidential/3125495/five-things-stand-out-democratic-party-platform/", "text": "\n\nThe Washington Examiner reviews the 92-page document released by the Democrats before their convention in Chicago, where they nominated Kamala Harris as their presidential candidate. The platform ...\n", "pub_date": "2024-09-21T15:36:00.000000Z", "extra": null}, {"type": "webpage", "title": "2024 Party Platform Comparison - FRC Action", "url": "https://downloads.frcaction.org/EF/EF18H05.pdf", "text": "\n\nCompare the Republican and Democratic platforms on life, marriage, and family issues for the 2020 and 2024 elections. See how each party supports or opposes abortion, LGBTQ+ rights, religious liberty, and more.\n", "pub_date": "2024-09-24T05:15:00.000000Z", "extra": null}, {"type": "webpage", "title": "Democratic party 2024 platform makes one thing clear: We're not Trump ...", "url": "https://www.politico.com/news/2024/07/13/democratic-party-draft-platform-2024-00167967", "text": "\n\nThe Democratic Party's 2019s platform for the next four years: We're not Donald Trump. The Democratic National Committee is poised to take up a draft of its 2024 platform proposal \n\na sweeping set ...\n", "pub_date": "2024-09-23T06:07:00.000000Z", "extra": null}, {"type": "webpage", "title": "Party Platform Comparisons - FRC Action", "url": "https://www.frcaction.org/platforms", "text": "\n\nCompare the values and policies of the Republican and Democratic parties based on their 2020 to 2024 platforms. See how the 2024 Republican platform differs from its previous versions and learn how elected officials vote in line with their party's platform.\n", "pub_date": "2024-09-23T05:18:00.000000Z", "extra": null}, {"type": "webpage", "title": "Comparison of the Republican and Democratic Party Platforms on Key Issues", "url": "https://diolc.org/wp-content/uploads/2020/10/Comparison-of-

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vision of President Biden, Vice President Harris, and Democrats on various issues such as economy, health care, climate, and democracy. \n# \u30101\u20202024 Democratic Party Platform - The American Presidency Project\u2020www.presidency.ucsb.edu\u3011\nRead the official platform of the Democratic Party for the 2024 presidential election, adopted at the national convention in Chicago. The platform outlines the party's vision, values, and priorities on various issues, such as economy, health care, climate, gun safety, democracy, and more. \n# \u30102\u2020The Democratic Party Platform, 2024 - Ballotpedia\u2020ballotpedia.org\u3011\nThe Democratic National Committee adopted a platform in August 2024 that focused on priorities for Democrats up and down the ballot, from growing the economy to securing American leadership worldwide. The platform was drafted and approved before Joe Biden withdrew from the presidential race and mentioned his second term. \n# \u30103\u2020A Comparison of the 2024 Republican and Democratic Party Platforms\u2020www.frc.org\u3011\nA Brief Comparison of 2024 Republican and Democrat Platforms . Republicans. Democrats. Life. Weakly pro-life: leaves abortion up to the states, cites the overturn of Roe v. Wade, disallows third-trimester abortions. Vocally and unequivocally allows for abortion under any circumstances\n# \u30104\u2020Democratic Party Platform Centers Women's Rights\u2020msmagazine.com\u3011\nAt the Democratic National Convention in Chicago, party leaders approved the 2024 platform Monday evening, promising to protect and strengthen women's rights. The 91-page document is a stark contrast to the Republican platform, which promises to continue the dismantling of women's rights started during Donald Trump's first term in office. \n# \u30105\u2020Party Platform - Democrats\u2020democrats.org\u3011\nThe Democratic Party platform outlines its vision for America and the world, covering topics such as health care, economy, justice, climate, democracy, and more. Download the PDF or read the preamble to learn about the party's values and goals for 2024. \n# \u30106\u2020DNC Releases 2024 Party Platform Draft, Outlining Historic ... - Democrats\u2020democrats.org\u3011\nThe draft platform features the achievements of the Biden-Harris administration and a progressive vision for the next four years. It contrasts with the RNC platform, which is based on Trump's Project 2025 agenda to strip away Americans' freedoms and dismantle democracy. \n# \u30107\u2020The 2024 Democratic Party platform features a lot of Joe Biden, and a ... \u2020news.yahoo.com\u3011\nThe Democratic Party's proposed platform, released Sunday on the eve of the Chicago convention, is full of contrasts between former President Donald Trump and the old Democratic nominee.. The 92-page nonbinding document, which outlines the Democratic National Committee's priorities for the next four years, will be voted on by delegates at the party's national convention on Monday. \n# \u30108\u2020DNC Party Platform\u2014Five Key Takeaways - Newsweek\u2020www.newsweek.com\u3011\nAhead of the Democratic National Convention starting Monday, Democrats have released their party platform in a 92-page document outlining their policy priorities in several key areas. The platform ... \n# \u30109\u2020Five things that stand out in the Democratic Party platform\u2020www.washingtonexaminer.com\u3011\nThe Washington Examiner reviews the 92-page document released by the Democrats before their convention in Chicago, where they nominated Kamala Harris as their presidential candidate. The platform ... \n# \u301010\u20202024 Party Platform Comparison - FRC Action\u2020downloads.frcaction.org\u3011\nCompare the Republican and Democratic platforms on life, marriage, and family issues for the 2020 and 2024 elections. See how each party supports or opposes abortion, LGBTQ+ rights, religious liberty, and more. \n# \u301011\u2020Democratic party 2024 platform makes one thing clear:

We're not Trump ... \u2020www.politico.com\u3011\u2019s The Democratic Party\u2019s platform for the next four years: We're not Donald Trump. The Democratic National Committee is poised to take up a draft of its 2024 platform proposal \u2014 a sweeping set ... \u301012\u2020Party Platform Comparisons - FRC Action\u2020www.frcaction.org\u3011\u2019 Compare the values and policies of the Republican and Democratic parties based on their 2020 to 2024 platforms. See how the 2024 Republican platform differs from its previous versions and learn how elected officials vote in line with their party's platform. \u301013\u2020Comparison of the Republican and Democratic Party Platforms on Key Issues\u2020diolc.org\u3011\u2019 This web page provides excerpts from the 2020 party platforms on human life, education, health care, foreign aid, and more. It also includes links to the full platforms and a nonpartisan guide to help voters compare the parties' positions. \u301014\u2020DNC Releases 2024 Party Platform to be Voted on at Convention\u2020democrats.org\u3011\u2019 The Democratic National Committee (DNC) released the final 2024 Democratic Party Platform, which will be voted on by delegates at the Convention. The platform reflects the diverse perspectives and unifying values of the Democratic Party and contrasts with Donald Trump's extreme agenda. \u301015\u2020The Democratic Party platform. - Tangle\u2020www.readtangle.com\u3011\u2019 Today's topic. The DNC platform. On Sunday, the Democratic National Committee (DNC) released the party's 2024 platform. In a press release, the DNC noted that the platform had been passed on July 16, prior to President Joe Biden's exit from the presidential race, but that the document \u201cmakes a strong statement about the historic work that President Biden and Vice President Harris have ... \u301016\u2020Side-by-Side Comparison Chart - 2024 Presidential Election\u20202024election.procon.org\u3011\u2019 Compare the positions of Kamala Harris, Chase Oliver, Jill Stein and Donald Trump on various issues for the 2024 presidential election. See their statements, biographies and sources on topics such as legal abortion, artificial intelligence, universal healthcare and more. \u301017\u2020What Does the Official 2024 Democratic Party Platform Say about ... \u2020www.americanmanufacturing.org\u3011\u2019 Regardless, the document is the Democratic party's official policy platform, so it's worth paying attention to, especially because it does include a strong emphasis on manufacturing issues. In fact, both infrastructure investment and manufacturing growth appear right at the start of Chapter One in the document, which focuses on the economy. \u301018\u2020Where we stand - Democrats\u2020democrats.org\u3011\u2019 Learn about the Democratic Party's values and policy priorities, as detailed in the party platform adopted at each national convention. Find out how Democrats are fighting for a better America on health care, economy, diversity, and democracy. \u301019\u2020Platform approved by Democrats still mentions Biden's 'second term'; \u2020www.pbs.org\u3011\u2019 The party platform, passed before Biden endorsed Harris, still mentions his 'second term' and his administration's achievements. It also outlines a progressive agenda for the next four years, but ... \u201cVisible: 0% - 100%", "pub_date": null, "extra": null}], "original_query": null, "command": "search", "args": ["democratic party platform 1979 vs today 2024"], "status": "finished", "is_complete": true, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "parent_id": "903c7b3a-65b8-4188-804e-819ba8177ef7", "request_id": "8c8f0af4593f0e2b-MXP", "timestamp": "absolute", "recipient": "all", "channel": null, "parent": "903c7b3a-65b8-4188-804e-819ba8177ef7", "children": ["5cb6f83e-2c76-4ca6-8531-1cb296daa8fd"]], "5cb6f83e-2c76-4ca6-8531-

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Chapter One: Growing Our Economy from the Bottom Up & Middle Out

This election is a choice between two very different economic visions for America: Donald Trump, who sees the world from his country club at Mar-a-Lago; and Joe Biden, who sees it from kitchen tables in Scranton like the one he grew up around. His economic agenda is about Main Street, not

Wall Street. It's about ending the days of trickle-down economics and investing in America in all Americans and delivering for communities too long left behind.

While Democrats keep fighting to lower costs for working families, Trump is rigging our economy for his Mar-a-Lago friends and billionaire donors, who like him, are only in it for themselves.

As president, Trump doubled down on the trickle-down policies of the past, cutting investment in infrastructure and education, and rewarding big corporations that ship jobs and profits overseas. He vowed to bring new factories to communities across America, but left nothing behind but a string of broken promises.

Democrats have a different record. We're delivering on President Biden's pledge to rebuild our economy from the middle out and bottom up, not the top down. We're investing in America in our infrastructure, our industry, our people, and our future. While Trump left office with historic budget deficits and the worst jobs record since Herbert Hoover, since President Biden took office, this country has come back from the brink, the deficit has fallen by over \$1 trillion, and we have the best jobs record since John F. Kennedy. We're powering the strongest economic recovery in the world.

ECONOMIC PROGRESS

At the start of the Biden-Harris Administration, in the midst of the worst economic crisis in 100 years, experts feared a stagnating recovery and even worried about a new recession. But Democrats chose to put workers first, and instead of recession, America has seen remarkable strength and resilience. Our economy grew by 3.1 percent last year in the fastest rate of any major economy in the world.

We've added nearly 16 million jobs not only recovering all the positions lost during Trump's botched handling of COVID, but also adding 6.3 million more than existed before the pandemic surpassing pre-pandemic projections for the labor market. During this Administration, 30 states from Mississippi to Pennsylvania have seen record-low unemployment; and the run of low unemployment nationwide hasn't been this long in over 50 years. Wages are up across the board, and rising fastest for lower-income workers, Black workers, Latinos, and women. Today's recovery is the fairest on record; in just four years, we've erased 40 percent of the wage inequality gap that took four decades to build. A record 18 million small business applications have been filed since President Biden took office, each one of them an act of hope.

While too many families still feel the pain of inflation at the grocery store, or around the kitchen table when they sit down to pay their bills, we're making progress. Wages are rising faster than prices, and inflation today is down nearly two-thirds from its peak. We have to finish the job. Democrats will keep fighting to prevent the kind of supply chain shocks and corporate greed that have done so much to raise prices. And we'll keep investing in American workers, American jobs, and American families, bringing factories home to win the race for the future. Democrats know the story of the middle class isn't separate from the state of the economy in it's at its heart. And we'll never quit fighting to make sure that everyone is in on the deal.

INVESTING IN AMERICA

Infrastructure

We can't have the best economy in the world if we don't have the best infrastructure. And for generations, American infrastructure was the envy of the world. But over the years, we stopped investing in it, and we fell to thirteenth in infrastructure rankings. The Trump Administration declared it "Infrastructure Week" every week for four years, and never built a thing. But under President Biden, we're finally rebuilding our roads, bridges, ports, airports, water systems, electric grids, broadband, and more, paving the way for a great American "Infrastructure Decade" that will create hundreds of thousands of good-paying union jobs.

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President Biden's pledge to rebuild our economy from the middle out and bottom up, not the top down. We're investing in America \u2013 in our infrastructure, our industry, our people, and our future. While Trump left office with historic budget deficits and the worst jobs record since Herbert Hoover, since President Biden took office, this country has come back from the brink, the deficit has fallen by over \$1 trillion, and we have the best jobs record since John F. Kennedy. We're powering the strongest economic recovery in the world.\n\nECONOMIC PROGRESS\n\nAt the start of the Biden-Harris Administration, in the midst of the worst economic crisis in 100 years, experts feared a stagnating recovery and even worried about a new recession. But Democrats chose to put workers first, and instead of recession, America has seen remarkable strength and resilience. Our economy grew by 3.1 percent last year \u2013 the fastest rate of any major economy in the world.\n\nWe've added nearly 16 million jobs \u2013 not only recovering all the positions lost during Trump's botched handling of COVID, but also adding 6.3 million more than existed before the pandemic \u2013 surpassing pre-pandemic projections for the labor market. During this Administration, 30 states from Mississippi to Pennsylvania have seen record-low unemployment; and the run of low unemployment nationwide hasn't been this long in over 50 years. Wages are up across the board, and rising fastest for lower-income workers, Black workers, Latinos, and women. Today's recovery is the fairest on record; in just four years, we've erased 40 percent of the wage inequality gap that took four decades to build. A record 18 million small business applications have been filed since President Biden took office, each one of them an act of hope.\n\nWhile too many families still feel the pain of inflation at the grocery store, or around the kitchen table when they sit down to pay their bills, we're making progress. Wages are rising faster than prices, and inflation today is down nearly two-thirds from its peak. We have to finish the job. Democrats will keep fighting to prevent the kind of supply chain shocks and corporate greed that have done so much to raise prices. And we'll keep investing in American workers, American jobs, and American families, bringing factories home to win the race for the future. Democrats know the story of the middle class isn't separate from the state of the economy \u2013 it's at its heart. And we'll never quit fighting to make sure that everyone is in on the deal.\n\nINVESTING IN AMERICA\n\nInfrastructure\n\nWe can't have the best economy in the world if we don't have the best infrastructure. And for generations, American infrastructure was the envy of the world. But over the years, we stopped investing in it, and we fell to thirteenth in infrastructure rankings. The Trump Administration declared it "Infrastructure Week" every week for four years, and never built a thing. But under President Biden, we're finally rebuilding our roads, bridges, ports, airports, water systems, electric grids, broadband, and more, paving the way for a great American "Infrastructure Decade" that will create hundreds of thousands of good-paying union jobs.\n\nThe Bipartisan Infrastructure Law is breaking ground on over 57,000 projects across 4,500 communities nationwide. We're rebuilding major road", "pub_date": null, "extra": null}, {"original_query": null}, {"command": "mclick", "args": "[0, 1, 2, 18, 19]"}, {"status": "finished", "is_complete": true, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "parent_id": "5cb6f83e-2c76-4ca6-8531-1cb296daa8fd", "request_id": "8c8f0af4593f0e2b-MXP", "timestamp_": "absolute"}, {"recipient": "all", "channel": null}, {"parent": "5cb6f83e-2c76-4ca6-8531-1cb296daa8fd", "children": ["74a34cb2-d05d-449b-a8b2-e09b6ed75e5a"]}, {"74a34cb2-d05d-449b-a8b2-e09b6ed75e5a": {"id": "74a34cb2-d05d-449b-a8b2-e09b6ed75e5a", "message": {"id":

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 For SMS, message & data rates may apply. Text STOP to end. Text HELP for help.
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 democracy is worth defending. \n\n[Image 1] \n\n##### \u001027\u0020Party platform
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 lowering costs for working families and investing in the middle class. Democrats are
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 \n * \u001010\u0020What we do\u00101 \n * \u001011\u0020Who we serve\u00101 \n *

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1973 oil embargo and the 1979 energy crisis, the party strongly pushed for **energy independence** and renewable energy investments. There was a focus on reducing dependency on foreign oil and improving fuel efficiency standards.

Human Rights and Foreign Policy: The Democratic Party championed **human rights** as a cornerstone of U.S. foreign policy, promoting democracy abroad and reducing U.S. military interventions, which contrasted with the Cold War-era politics.

2024 Democratic Platform

The 2024 platform reflects a much broader and more progressive scope, influenced by current challenges like climate change, economic inequality, and healthcare. Some key priorities include:

- Climate Action:** A strong focus on **combating climate change** through investment in clean energy, environmental protection, and infrastructure projects aimed at achieving net-zero emissions.
- Healthcare as a Right:** Universal access to affordable healthcare remains a major priority, with calls to expand programs like **Medicare** and reduce prescription drug costs.
- Social Justice and Equality:** The 2024 platform emphasizes **racial equity**, **LGBTQ+ rights**, and **women's rights**, including the protection of reproductive rights and advancing gender equality.
- Economic Growth for All:** There's a strong focus on **building the economy** from the bottom up and middle out, which includes raising wages, creating more union jobs, and expanding infrastructure investments to reduce income inequality.

In contrast to the more moderate and centrist focus of the late 1970s, today's platform embraces progressive ideals, reflecting the changing dynamics within the Democratic Party and the evolving concerns of modern voters."}], "status":

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"\n\nSecuring The Border

\n\nExpanding Legal Immigration & Deterring Illegal Immigration \n\nChapter Eight: Advancing the President's Unity Agenda 73\n\nBeating The Opioid Epidemic

\n\nInvesting In Mental Health

\n\nProtecting Kids Online, Strengthening Americans;

\n\nData Privacy, & Promoting Competition

[illegible]

know the story of the middle class isn't separate from the state of the economy
it's at its heart. And we'll never quit fighting to make sure that
everyone is in on the deal.

INVESTING IN AMERICA

Infrastructure

We can't have the best economy in the world if we don't have the best infrastructure. And
for generations, American infrastructure was the envy of the world. But over the years,
we stopped investing in it, and we fell to thirteenth in infrastructure rankings. The
Trump Administration declared it "Infrastructure Week" every week for four
years, and never built a thing. But under President Biden, we're finally
rebuilding our roads, bridges, ports, airports, water systems, electric grids,
broadband, and more, paving the way for a great American "Infrastructure
Decade" that will create hundreds of thousands of good-paying union jobs.

The Bipartisan Infrastructure Law is breaking ground on over 57,000 projects across 4,500
communities nationwide. We're rebuilding major road", "pub_date": null, "extra":
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https://democrats.org/where-we-stand/\n\n * \u00100\u0020DNC\u0011 \n *
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