CHRISTOPHER K. DENQ (THEY/HE)

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SUMMARY

Christopher Denq is an applied math sophomore with 4.5 years of experience in industry, academia, and policy. As a college re-entry student, their diverse experience across the art market (previous career), data science (current dayjob), and AI research (current career) augments their creative problem-solving, data communicability, and research perspective.

Chris is passionate about improving AI's capabilities while reducing its potential for abuse, particularly against under-represented groups. Having experienced first-hand how overlooked AI safety is in industry, they now seek to build an academic career at the intersection of ML optimization, interpretability, and regulation—with the goal of developing scientific literature, best-practice, and safety-first cultures.

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EDUCATION (back to top)

University of Illinois Springfield | Springfield, IL
B.A., Mathematical Sciences and Philosophy   Dec 2022 – Exp. May 2026
Concentration in Ethics (Analytical Philosophy)
- Math: Differential Equations, Linear Algebra, Linear Optimization, Probability Distributions, Applied Statistics, Seminar: Mathematics & Framework Behind GPT, Discrete Structures
- Philosophy: Ethics, Feminist Philosophy, Formal Logic I, Logic & Formal Reasoning, Philosophy of Science, Philosophy of AI (Fall)
- Honors: Directed Research/Reading (DRR) Project 2024, IPL: Internship in Mathematics 2024, IPL: Project in Mathematics 2024

Foothill College | Los Altos Hills, CA
Non-degree, Mathematics and Computer Science courses   Apr 2022 – Dec 2022
- Math: Multivariate Calculus, Intro. Linear Algebra, Discrete Mathematics, Elementary Statistics
- CS: Intro. OOP, Intermediate Software Design, Advanced Data Structures and Algorithms, Intro. Cloud Computing

Self-Education   May 2021 – Apr 2022
- Programs: freeCodeCamp Bootcamps, Open Computer Science (University of Waterloo) Programs
- Resources: HackerRank/NeetCode, YouTube, Medium/Towards Data Science, Kaggle, Khan Academy (Mathematics)

University of Pennsylvania | Philadelphia, PA   Aug 2015 – Dec 2017, Jan 2019 – May 2021
B.A., Art History and Philosophy (Double Major)
Concentration in Aesthetics (Humanistic Philosophy)

WORK EXPERIENCE (back to top)

United States Department of Defense   Jun 2023 – Present
Data Scientist | Washington, DC & Crane, IN   PIs: Dr. Gregory Forcherio, Dr. John Dilger
Data Scientist (NSWC: Crane)
- Invited to continue project after successful NSIN Fellowship under NSWC: Crane
- Refactored over 12k lines of code to future-proof for additional data formats and account for new project scope (Crane decided to expand previous app into an entire platform to house all future analytics products for the research division)
- Developing data compatibility with **open-source** Gephi to ensure seamless downstream integration
- Coordinated with 2 cross-functional defense teams across 6 staffers and 2 research executives for product development
Data Scientist (NSIN Fellow)
- Handpicked as top 5% finalist (50 of 950) to spearhead AI initiative at NSWC: Crane through NSIN's X-Force Fellowship
- Engineered full-lifecycle NLP app that scrapes, stores, and analyzes upwards of 2TB of paper data for Crane leadership
- Maintaining front-end UIX platform (browser-based) and back-end analytics (e.g. network graphing, clustering)
- AI project's output informs stakeholders like Crane Director of Research on $3.5M research budget, direction, and policy

Adobe Inc.
Data Scientist (Digital Academy) | San Jose, CA   Contracted: Mar 2023 – Jun 2023
- Handpicked as top 0.8% finalist (25 of 3000) to participate in Adobe Digital Academy's Data Science Fellowship
- Awarded $26,000 to complete 300+ hours of instructor-led AI education along with Adobe workload
- Engineered 3 projects for Adobe Digital Academy, including NLP classification model for tagging AI-generated text
- [20% Project & Firm Initiative](#): developed CNN computer vision model for identifying deepfakes and edited images

Tzu Chi Medical Foundation
Data Analyst | Alhambra, CA   Contracted: Nov 2022 – Mar 2023
- Optimized patient treatment speed by 25% through streamlining office workflow (automated forms and data insights)
- Engineered 12 data products (dashboards, databases) to inform 25 medical staff operating across 4,200 patients

PNC Financial Services Group, Inc.
Data Analyst Intern | Brecksville, OH   Contracted: Jun 2022 – Aug 2022
- Saved $375,000 via data-informed recommendations on improvements to internal loan pipeline
- Engineered 8 data products (optimization scripts, server dashboards) to report across 4 teams and 300 employees

2U Educational Services
Data Analyst Assistant Instructor | Remote   Contracted: May 2022 – Nov 2022
- Lead cohort of 35 students in team of 3 teaching staff across 24 weeks of instruction with a 100% graduation rate
- Supported additional 210+ hours of code review and tutoring in weekly sessions and open office hours

Wyzant
Computer Science Tutor | Remote   Freelanced: Sep 2021 – May 2022
- Tutored 25+ students from high school to adult learners for 65+ hours on various computer science problems
- Succeeded in helping 25+ students raise their test scores by average of 2.7 letter grades

Art Market (Aggregated)
Art Analyst, Curator, Docent, Gallery Intern | Philadelphia, PA & New York, NY   Jun 2016 – Aug 2022
- Aggregated 3 years of work experience including internships, part-time, and cooperatives across 5 art institutions, notably **Christie's** (premier art auction house) and **Philadelphia Museum of Art** (world-leading art museum)
- Directly contributed (primary client-facing contact) to $900k in sales, openings, tours, and donations
- Indirectly contributed (non-primary contact or specialist support) to collections totaling $400M+
- Conducted market and academic research for 20 artworks, contributed to 3 art catalogues, managed 2 vernissages (private showings), and curated 5 long-standing client relationships with new donors/collectors
- Led 6 docent tours, 2 gallery tours, and 2 gallery/museum openings

TECHINCAL RESEARCH EXPERIENCE ([back to top](#))

Kong Research Group, University of Illinois Springfield   Sep 2023 – Present
Mathematical AI Researcher | Springfield, IL   PI: Prof. Liang Kong
- Researching training optimization and application of physics-informed neural network (PINN) towards disease-spread and energy-consumption modeling, with insights contributing to AI technical interpretability

Cambridge AI Safety Hub (CAISH), Cambridge University   Jan 2023 – Feb 2023
CAISH Machine Learning Fellow | Cambridge, England   Supervisor: Hannah Erlebach (CambridgeEA)
- Handpicked as top 6% finalist (30 of 500) to partake in CaMLAB Fellowship (2-month curriculum for AI safety engineering)
- Engaged in pair-programming to work on transformer interpretability, model training, and hyperparameter tuning

Hsu Research Group, California State University: Northridge   Nov 2021 – May 2022
Machine Learning Research Assistant (Curriculum) | Northridge, CA   PI: Prof. Wenchin Hsu
- Researched ML education pedagogies and curriculum development for Prof Hsu's Spring 2023 graduate ML course
- Succeeded in delivering 280+ slides, 10+ Java-to-Python code conversion, and applying mathematics to education

Systems Biology Laboratory, University of Florida   Jun 2012 – Sep 2013
Machine Learning Research Assistant (Bioinformatics) | Gainesville, FL   PI: Prof. Su-Shing Chen
- Researched optimal parameter space for SVM techniques to detect influential biomarkers for Alzheimer's

GOVERNANCE RESEARCH EXPERIENCE

CEN-CENELEC JTC21, European Parliament   Contracted: Mar 2023 – Mar 2024
AI Governance Researcher | Brussels, Belgium & Eindhoven, Netherlands   PI: Dr. Koen Holtman
Senior Standards Contributor (AI Standards Lab)
- Personally onboarded as contributor to AI Standards Lab (Holtman's policy group) after successful AISC8 contract
- Synthesized contemporary AI safety literature to convert to legal drafts for JTC21
- Reviewed legal formats and paper content of junior contributors; advises junior contributors on relevant AI safety sources
- Due to successful passing of EU AI Act on March 13th, contract was successfully completed

Standards Contributor (AISC8 Fellow)
- Handpicked as top 5% finalist (8 of 150) for AI Safety Camp 8's Public Policy project
- Staffed to Dr. Koen Holtman, Dutch rep. to CEN-CENELEC JTC21 (technical committee to EU Parliament on EU AI Act)
- Developed minimally acceptable best practices for AI risk management systems to support JTC 21 knowledge base
- Specialized in informational hazards and risk levels from unregulated GPAI/LLM models at both the user and societal level

Cambridge AI Safety Hub (CAISH), Cambridge University   Nov 2023 – Dec 2023
CAISH Policy Fellow | Cambridge, England   Supervisor: Gabor Fuisz (CambridgeEA)
- Handpicked as top 16% finalist (50 of 300) to partake in AI Gov. Fellowship (2-month reading group for AI governance)
- Engaged in 6 3-hour open forums related to relevant AI safety topics in governance, regulation, and ethics

Supervised Program for Alignment Research (SPAR), Stanford University   Contracted: Jan 2023 – Mar 2023
AI Governance Researcher | Stanford, CA   Supervisor: Robi Rahman (Epoch, ex-Stanford HAI)
- Handpicked as one of 2 out of 25 applicants to partake in Stanford AI Alignment's SPAR: Public Policy project
- Analyzed historical AI metrics (parameter, compute, dataset) across 31 countries to verify regional forecasting trends and inform governance strategies

Good Futures Initiative (GFI), UC Berkeley   Contracted: Dec 2022 – Jan 2023
AI Governance Intern | Berkeley, CA   Supervisor: Aris Richardson (RAND Corporation)
- Handpicked as one of 25 out of 40 applicants to partake in EA@Berkeley Group's GFI winter internship
- Performed literature review of auditing policies across 6 industries (hardware, software, robotics, cybersecurity, pharmaceutical, and financial) with goal of establishing precedents for AI-specific auditing frameworks

EXTRACURRICULAR EXPERIENCE

BUILD, University of Pennsylvania   May 2023 – Aug 2023
AI Project Mentor/TA | Philadelphia, PA   Supervisor: Prof. Robert Ghrist
- Supervised by Prof. Robert Ghrist and his BUILD group, which seeks to do R&D involving generative AI
- Advised cohort of 20 undergrad AI product engineers, each pursuing their own product/research development tracks

AI Project Builder | Philadelphia, PA
- Created proof-of-concept generative AI app to practice crisis intervention and de-escalation language using LangChain

Science and Technology Wing (STWing), University of Pennsylvania   Jan 2016 – May 2021
Marketing Officer (Radar) & General Member | Philadelphia, PA
- Assisted with marketing efforts for the STWing residential program, which is committed to providing a synergetic learning community for STEM and STEM-adjacent undergraduates

VOLUNTEER EXPERIENCE

Gender & Sexuality Student Services (GSSS), University of Illinois Springfield   Dec 2022 – Present
Advocate and Member | Springfield, IL
- Supported diversity, equity, and inclusion efforts at University of Illinois Springfield
- Offered feedback on LGBTQ+ workshops to help improve school-wide education and advocacy efforts

Gender and Sexuality Alliance (GSA), Foothill College   Mar 2022 – Dec 2022
Student Mentor | Los Altos Hills, CA
- Supported diversity, equity, and inclusion efforts at Foothill College
- Mentored other LGBTQ+ members about life and work experiences, especially experiences related to navigating STEM field

Lambda Alliance, University of Pennsylvania   Jan 2019 – May 2020
Volunteer Member | Philadelphia, PA
- Served as liaison between Lambda Alliance (umbrella organization) and Penn Non-Cis club
- Assisted with meeting setups, event promotion, and general community building efforts for all Lambda-affiliated groups

PUBLICATIONS, PRESENTATIONS, AND AWARDS (back to top)

AI Papers – Computer Science, Mathematics, and Machine Learning
- WIP: *Energy-consumption modeling with PINNs*   (Expected) May 2024
- WIP: *Hands-On Learning with PINNs: A New Paradigm for Differential Equations Education*   (Expected) Apr 2024
- A meshfree deep learning approach for numerical solutions of differential equations | *Pending*   Mar 2024
- A diagnostic methodology for Alzheimer's disease | Journal of Clinical Bioinformatics   Aug 2013

AI Texts – Law, Governance, Regulation, and Public Policy
- Survey of GPAI Informational Hazards | AI Standards Lab x EU Parliament   Aug 2023
- Informational risk management systems for LLMs | JTC 21, EU Parliament   June 2023
- Infohazards and privacy risk from LLMs | JTC 21, EU Parliament   May 2023
- Trends in landmark machine learning model training | Stanford HAI   Mar 2023
- Survey review of AI-adjacent audit regulations | UC Berkeley GFI Showcase   Jan 2023

Presentations, Talks, and Awards
- UIS[1]: Artificial Intelligence Campus Learning Community (AICLC) Speaker Series 2024   (Upcoming) Nov 2024
- UIS[1]: Mathematics Colloquium 2024   (Upcoming) May 2024
- Artificial Intelligence in Education Technology (AIET) 2024   (Pending) Apr 2024
- Chicago Area Undergraduate Research Symposium (CAURS) 2024   (Pending) Apr 2024
- Mathematical Association of America (MAA): Washington DC Section 2024   (Pending) Apr 2024
- UIS[1]: Student Technology, Arts, & Research Symposium (STARS) 2024   (Upcoming) Apr 2024
- Mathematical Association of America (MAA): Illinois Section 2024   March 2024
  - Outstanding Undergraduate Award for Best Paper and Presentation (OUR Award), Top 8% (2/25)
- University of Pennsylvania: BUILD Summer Summit 2023   Aug 2023
  - Best App/Research Project, Top 13.6% (3/22)
- Stanford University: Stanford AI Alignment (SAIA) Research Symposium 2023   Mar 2023
- University of California Berkeley: Berkeley Good Futures Initiative (GFI) Research Symposium 2023   Jan 2023

Attended Workshops
- UC Berkeley Center for Long-Term Cybersecurity (CLTC): NIST 2nd Draft Workshop (invite only)   Aug 2023
- UC Berkeley Center for Long-Term Cybersecurity (CLTC): NIST 1st Draft Workshop (invite only)   May 2023
- AI Alignment Retreat 2022 (invite only)   Dec 2022

[1]University of Illinois Springfield

RESEARCH AND PROJECT GRANTS (back to top)

Business Innovation Challenge 2022, 2nd Place Award   2022
Foothill College | Los Altos Hills, CA   Presenter: Mr. Laurence Lew
- $500 social innovation prize for prototyping ML-powered loan eligibility predictor to help students quickly gauge loan success rates with government, non-profit, and for-profit financial aid sources

John C. Parker Fellowship for Undergraduate Research, Recipient for 2016   2016
University of Pennsylvania | Philadelphia, PA   Presenter: Dr. Krimo Bokreta
- $500 undergraduate research grant for statistical research about game theory states for board games and redesigned custom board game prototype implementing statistical design principles

SELECTED PROJECTS (back to top)

FDA Food Violation Classifier | Source   Dec 2023
Python: Matplotlib, Numpy, Pandas | Scikit-Learn, NLTK | Streamlit
- Developed a logistic regression model to predict FDA food safety noncompliance for restaurants (0.98 testing precision).

Academic Research NLP Analytics Platform | Source   Sep 2023
Python: Matplotlib, Numpy, Pandas | NLTK, Textblob, genism, NetworkX | Streamlit
- Developed a full-stack, locally-deployed Python app to visualize academic paper meta-data
- Used by the Department of Defense to monitor academia and inform their own research direction, budget, and policy

Deepfake Image Classifier | Source   Sep 2023
Python: Matplotlib, Numpy, Pandas | Tensorflow: Keras | Streamlit
- Developed an EfficientNetv2 convolutional neural net to detect deepfakes (0.99 validation precision)

Reddit's Subreddit Text Classifier | May 2023
Python: Matplotlib, Numpy, Pandas, Seaborn, Flask, SQLAlchemy | Tensorflow: Keras | SQL | HTML/CSS/JS
- Developed ensemble model (Random Forest, Logistic Regression) to differentiate between subreddits (0.83 testing F1-score).

SKILLS AND FLUENCIES

Core Competencies
- **Coding Languages**:   Python (OOP & Functional) | APIs | Git, GitHub, GitBash | Unix, Shell
- **ML & Computation**:   Scikit-Learn, Keras, Tensorflow | NLTK, Textblob, genism, NetworkX
- **Analytics/Visualization**:   Pandas, Numpy, Matplotlib, Seaborn | Tableau | Excel/VBA
- **Database, Cloud, DevOps**:   SQL | Streamlit | Streamlit Community
- **Domains:**   Back-end Engineering | NLP | Classification | Technology Policy and Law

Auxiliary Competencies
- **Coding Languages**:   C/C++ | HTML/CSS/JS
- **ML & Computation:**   Pytorch | SciPy, Statsmodel
- **Database, Cloud, DevOps**:   NoSQL | PyMongo | Apache Hadoop/Spark | AWS | Flask, SQLAlchemy
- **Domains:**   Full-stack Engineering | Forecasting | Computer Vision | GenAI/LLMs