

AI: A Digital Species



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AI AND HIGHER EDUCATION: IS IT TIME TO RETHINK TEACHING AND ASSESSMENT?

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What are you?

What are you? Explain in one sentence to a 10 year old.

What are you? Explain in two sentences to a university student.

What are you? Explain to a university teacher.

What are you? Explain to an economics research scholar.



What role could and should generative AI play both in and on the classroom in supporting effective, engaging and active learning for university students?

What challenges AI poses to the traditional role of the teacher in the classroom?

What challenges AI poses to academic integrity and evaluation of students?



What will Iqbal say to youth about use of Social Media

Allama Iqbal, known for his deep reflections on spirituality, selfhood (*Khudi*), and societal progress, would likely have a nuanced view of social media's impact on youth. Here's what he might say:

1. Distraction from Purpose:

Iqbal would likely be concerned about social media's ability to distract youth from their true purpose. He often emphasized the need for deep self-reflection and personal growth, and he might view the constant scrolling



New Wave of Technology

- What does the wave of technology mean for humanity?
- **Historical discoveries: Fire, the wheel, harnessing electricity**
- Transformation of human civilization through technological advancements
- Advanced AI and biotechnology
- **Benefits: Unlock secrets of the universe , Cure diseases, Create a healthier, sustainable world**



The Dangers

- Manipulating DNA: implications for individuals and ecosystems
- **Choice: Unparalleled possibilities vs. unimaginable perils**
- Exponential speed of change in technology (e.g., LLMs)

The Rise of AI



Homo Technologicus

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- Humanity's relentless drive to improve and evolve through technology
- **From pickaxes to planes: evolution driven by technological advancement**
- Ecosystem of inventions expands exponentially
- **AI: Replicating human intelligence**
 - Facial recognition, autonomous driving, text/image generation
 - Massive economic and quality of life improvements
- Synthetic Biology: Editing life itself
 - Gene editing, disease eradication, potential threats



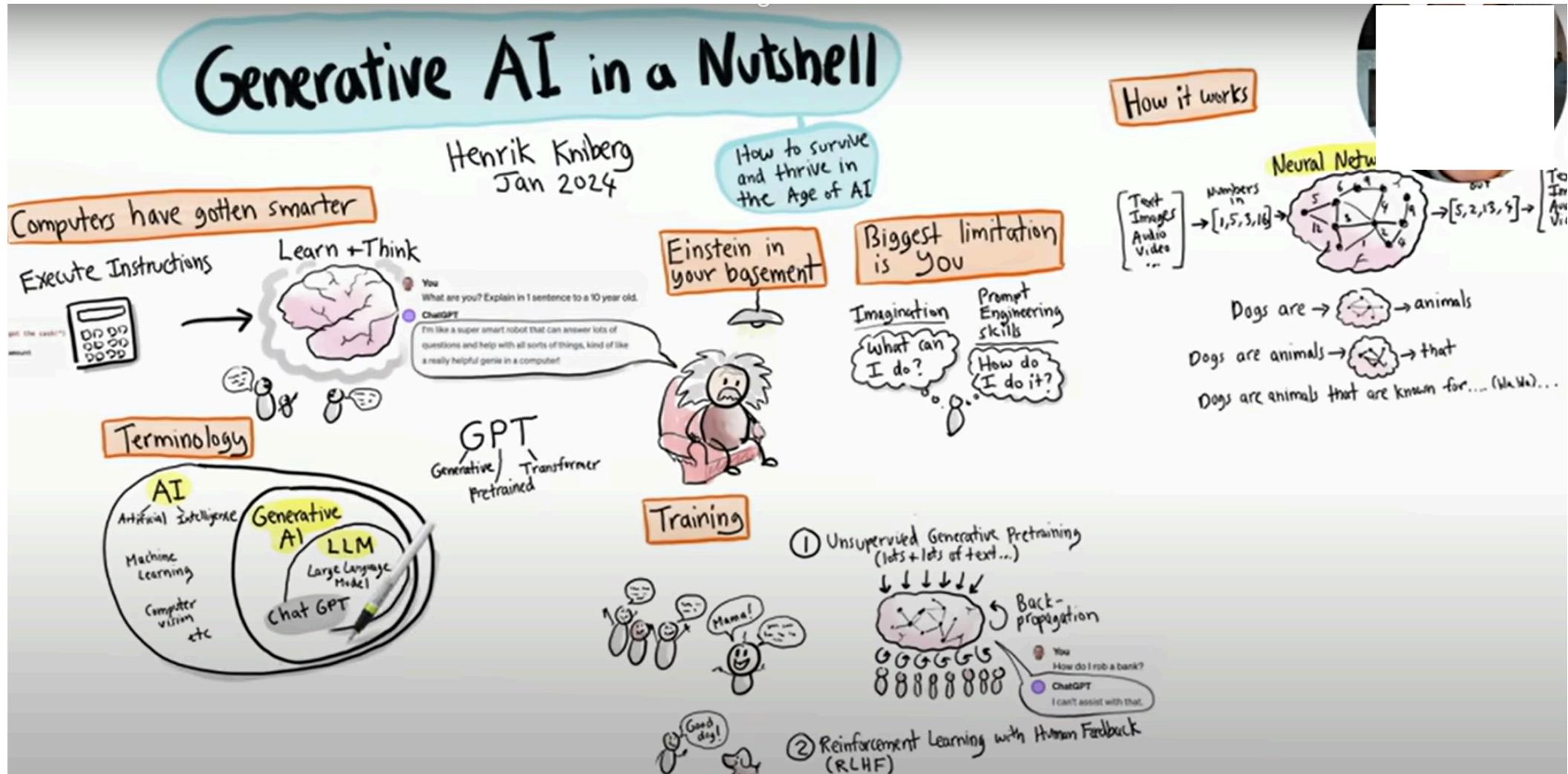
The Dilemma

- Replicating our unique intelligence
- The Luddite reaction: fears, bans, moratoriums
- Challenge: balancing immense benefits and potential perils

The Containment Problem



Generative AI in a Nutshell



Generative AI in a Nutshell - how to survive and thrive in the age of AI

Einstein in your basement

Biggest limitation is You

Imagination
what can I do?
Prompt Engineering skills
How do I do it?

Training

① Unsupervised Generative Pretraining (lots + lots of text...)

Back-propagation

You: How do I rob a bank?
ChatGPT: I can't assist with that.

② Reinforcement Learning with Human Feedback (RLHF)

Neural Network

Numbers in $[1, 5, 3, 16] \rightarrow [5, 2, 13, 4] \rightarrow$ Text Images Audio Video

Dogs are \rightarrow animals

Dogs are animals \rightarrow that

Dogs are animals that are known for... (bla bla)...

Models, models everywhere

Llama, Claude, Bard, GPT 3.5, GPT 4, ...etc...

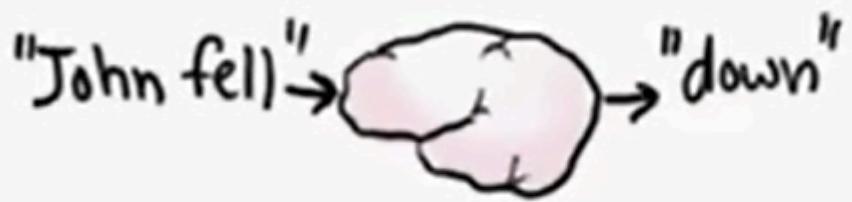
Speed ↑
Capability ↑
Cost ↓
Downloadable
Open Source

Easy to use, Specialized, Integrated, I'm back!

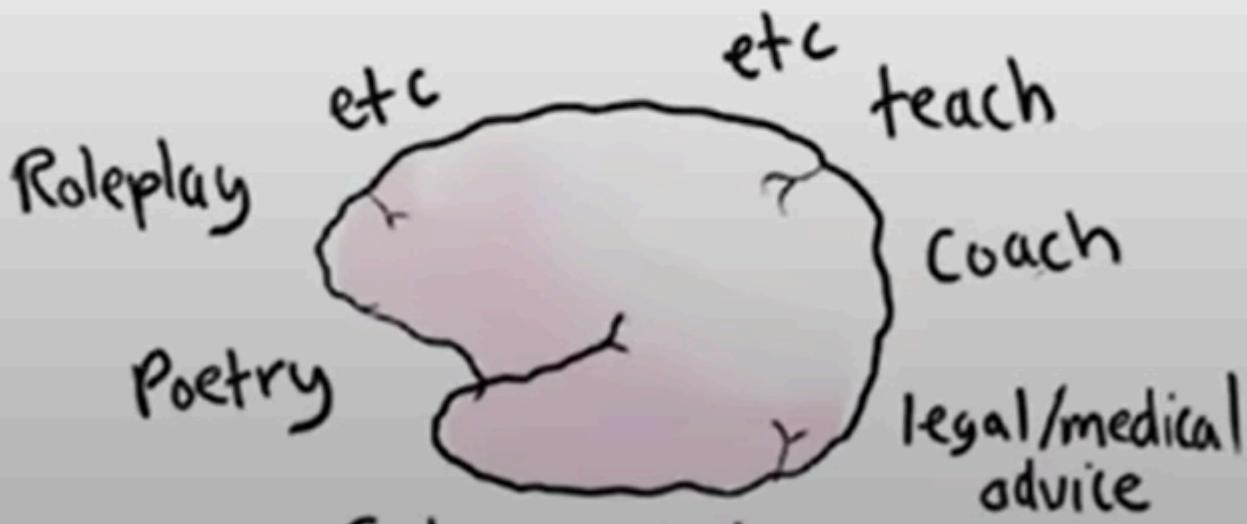


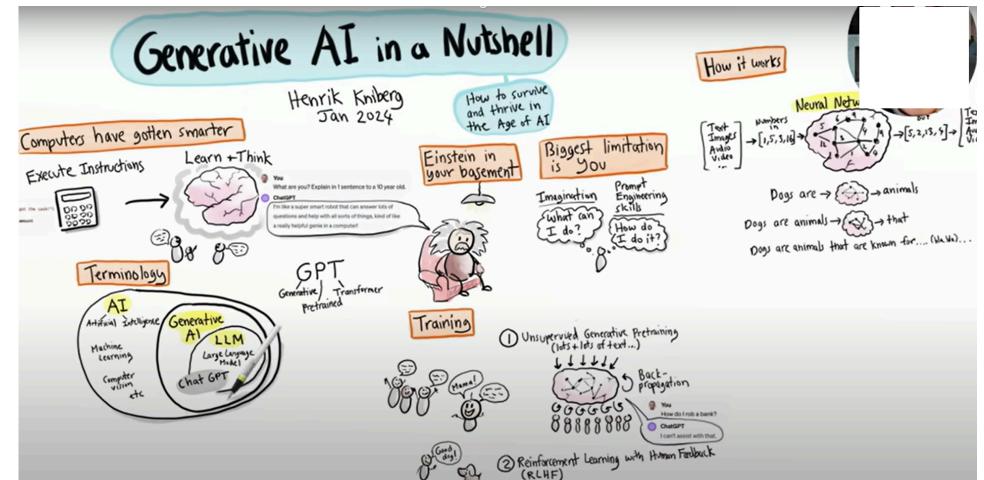
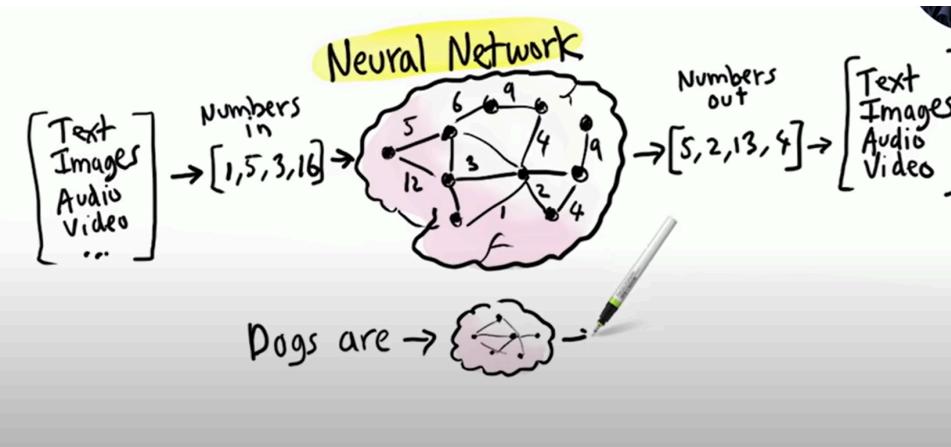
Emergent Capabilities

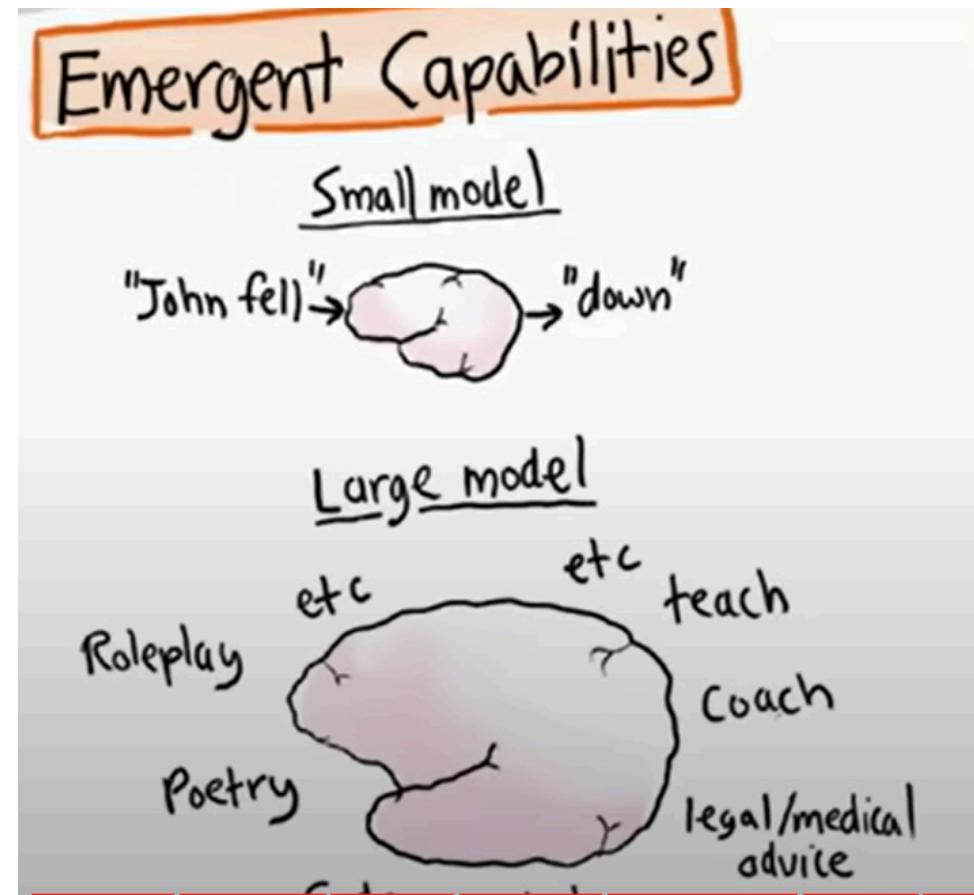
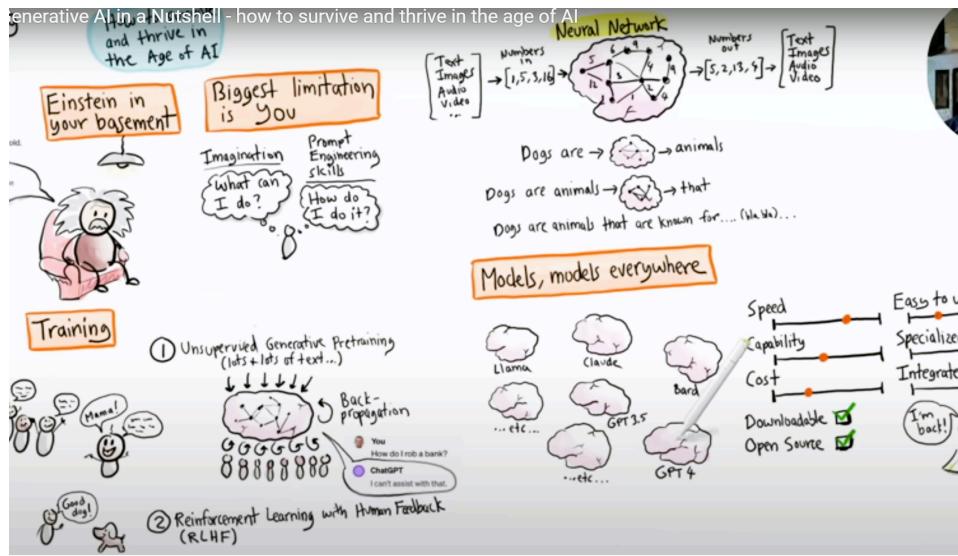
Small model



Large model







Generative AI in a Nutshell

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Race between Education and Technology

A Race Between Technology & Education



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The Impact of AI on Education

- AI is increasingly becoming a part of educational and professional landscapes.
- **The core issue is not just preventing cheating but recognizing that AI can accomplish college-level tasks.**
- Graduating students who can write only as well as AI seems like a recipe for unemployment.
- **Even if you can prevent cheating, the real problem is that AI can do college-level work.**



AI as a Partner in Learning

- AI can help accelerate achievements both in educational settings and beyond.
- **Educators need to guide students to be better thinkers, particularly in how they use AI.**
- AI is becoming a new, powerful partner, in both the classroom and the real world, that can accelerate accomplishment and achievement.
- **It is the job of educators to help students become better thinkers. Our new job is to help them become even better thinkers with AI.**



The Role of AI in Idea Generation

- AI can assist in generating ideas, refining questions, and clarifying thought processes.
- Humans still need to iterate and prototype, but AI can generate a high volume of ideas, which humans often struggle with.

The best way to have a good idea is to have lots of ideas. Humans will need to continue the process of prototyping, testing, and iterating, but humans consistently struggle to produce large quantities of different and new ideas.'



AI's Role in Education: Practical Applications

- AI can help with routine educational tasks such as grading, creating assignments, learning outcomes of a lecture and managing student interactions.
- Answering emails? Summarizing documents? Grading papers? Creating new assignments, activities, or assessments?

Your job is changing,& an AI collaborator could make it better & easier. Upload an existing syllabus and ask for



Ethical Challenges and Considerations

- While AI detection tools exist, they are not foolproof, and reliance on them alone could have unintended consequences.
- **The rise of AI demands a reevaluation of academic standards and integrity.**

Reducing cheating is good, but we also need to rethink our standards, what we are really hoping to teach, and what academic integrity will mean in this new era. More students will use AI if they have motive, means, and opportunity.



AI in Grading and Assignments

- AI can help make grading more efficient and consistent, but it also changes the nature of what grades represent.
- **The use of AI in education should aim to prepare students for real-world skills, not just academic performance.**

Can grading become a tool to prepare students with better real-world skills? The traditional days of grading responses to prompts are over. Since all of us will be thinking in dialogue with AI...



Future Implications and the Role of AI

- AI's integration into education is inevitable and can be beneficial if used properly.
- **Students and educators need to learn how to collaborate with AI to enhance learning outcomes.**

Banning AI from the classroom will backfire, just as Wi-Fi kill switches did. Graduates without the ability to think, write, and work with AI will be at a serious disadvantage for future jobs.



Embracing AI in Education

- AI offers both challenges and opportunities; educators need to guide students in using AI effectively.
- The focus should be on enhancing critical thinking and leveraging AI as a tool for better learning outcomes.

Building AI feedback into assignments can increase motivation, learning, and agency. The point to all of these is not predictive accuracy, but feedback to help us think.



Comming Wave & Jobs

- **“AI offers vast tools for augmenting workers and enhancing work. We must master these tools and make them work for us.” David Autor**
- As per David Autor, the problem is that older models assumed technology ” might raise some boats more than others, but wouldn’t lower any boats. However, as digital technology transformed the globaly economy there was “lots of evidence people were made worse off.”



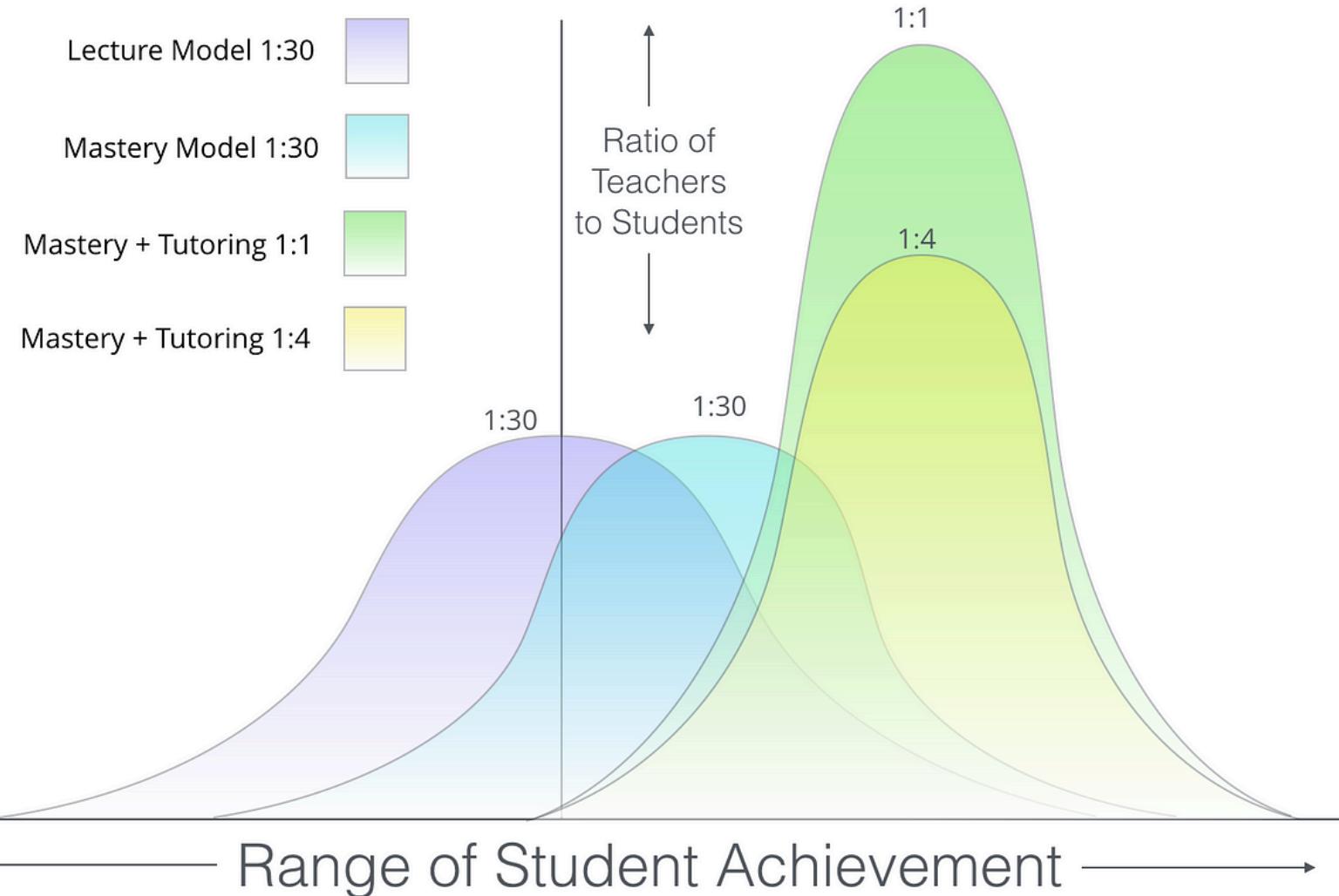
The Future of Education with AI

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Two Sigma Problem



AI Tutoring : Khanmigo , Connigo

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- “Benjamin Bloom’s 2 Sigma Study”
 - “1-to-1 Tutoring: Two Standard Deviation Improvement”
 - “Unlocking Potential: From Average to Exceptional Students”
 - “AI Tutoring: A Scalable Solution to the 2 Sigma Problem”
- “Introducing Khanmigo: Your Personal AI Tutor”
- “Enhanced Learning Experience: Socratic Conversations”
- “AI Assistance in Math, Programming, and Literature”
- “Empowering Students with Personal Coaching”



AI Writing Coach

- “Collaborative Writing with AI Assistance”
- “Enhancing Writing Skills: AI-Student Collaboration”
- “Feedback, Guidance, and Improvement in Writing”

Reading Comprehension

- “Interactive Reading Comprehension with AI”
- “Analyzing Texts, Answering Questions, and Providing Insights”
- “Enhancing Critical Thinking and Analysis Skills”



- “AI in the Classroom: Indo-Pak History Lesson”
- “AI-Powered Teaching Assistant for Teachers”
- “Lesson Planning, Explanation, and Progress Monitoring”
- “Transformative Potential of AI in Education”
- “Enhancing AI Capabilities for a Magical Learning Experience”
- “Combining Human Intelligence with AI for Educational Advancement”



Sameulson like Assistan

Give a learning outcomes on consumer theory lecture in 3 points with 15 words for each point

Differentiate between Marshalian and Hicksian demand function, restrict response to 50 words

Explain it in little detail, restrict response to 100 words

Give some mathematics

Provide a real life example



The 3 Principles of a Learning Accelerator



Blended Learning

A mix of digital and face-to-face teaching methods to create a flexible learning experience.



Personalization

Personalization focuses on customizing the learning experience to the unique needs and goals of individual

Text to image

Prompt : Create an image for QAU students sitting as a community learners in a classroom.





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Old vs New Model



Yet, our educational institutions have not evolved much. We still put people in lecture halls for one-size-fits-all teaching, and many companies only offer a couple of days of training per year. This model is outdated.

Things not discussed

- Customised advanced tools: Policy Advisor, Fiscal Policy Advisor, Economics Expert,...
- **Coding, Mathematics, Data Analysis ...**
- Technology's Impact on Humanity

Containment: Can We Do It?



- Navigating the Coming Wave
- **AI and Wars**
- How Ukraine countered largest every military deployment of Russia
- **AI and the Future of Work**



Prompt

You are hiring a “waiter” The typical daily wage rate is PKR 800. You have 2 candidates. Person 1: Has 1 year(s) of experience in this role. Requests PKR 1100. Person 2: Has 0 year(s) of experience in this role. Requests PKR 900. Who would you hire? You have to pick one.

Explain Solow Growth model to an undergraduate student in 70 words.

Simulate the Solow growth model and plot the results in a four chart.



Resources

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- Re-inventing Education for the Digital Age | David Middelbeck | TEDxMünster
- AI for Economists: Prompt & Resources
- Teaching Naked Teaching with AI
- What is Prompt Engineering
- Policy Advisor
- Fiscal policy advisor
- Economics expert
- Duolingo
- R for economics and Econometrics
- Stata ai



One Day-Workshop on Advanced Use of Generative AI (including Fiscal Policy Advisor, Economics Experts AI tools ...) for Economics Research, Ideation, Research Questions, Assessing Fitness of Paper for Specific Journal, Advanced Data Analytics, Coding, Econometrics, LLM- better, faster, cheaper

Coming Soon



Conclusion

Education needs to catch up with technology. There are many ways for us to contribute, whether as teachers, parents, students, or colleagues. Together, we can help build the education system of the future, one that is personalized, flexible, and better suited to the challenges of the 21st century.

Thank you for your attention.

