Scott A. Mueller

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Professional Summary

Versatile AI researcher and software engineer with expertise in decision making and counterfactual reasoning. Under the mentorship of Turing Award winner Judea Pearl, I developed deep expertise in causality and its applications to machine learning. My career encompasses impactful research, software development & architecture, and entrepreneurship. I am particularly interested in integrating causal inference with AI systems to advance toward human-level reasoning and push those boundaries.

Education

Ph.D. in Computer Science | UCLA | August 2021 – March 2025
Major: Artificial Intelligence
Minors: Data Science, Statistics
Advisor: Judea Pearl
GPA: 4.0
Dissertation: *Personalized and Situation-Specific Decision Making with Counterfactual Reasoning*
Doctoral committee: Judea Pearl, Onyebuchi Arah, Adnan Darwiche, Chad Hazlett, Eunice Jun

M.S. in Computer Science | UCLA | September 2020 – June 2021
GPA: 4.0
Thesis: *Estimating Individualized Causes of Effects by Leveraging Population Data*

B.S. in Computer Science | UCSB | October 1995 – June 1999

Professional Experience

Research Scientist | Toyota Research Institute | April 2025 – Present
· Developed causal modeling software to ask causal questions of tabular data
· Causal AI Research project
    o Comprehensive causal and counterfactual reasoning benchmarks
    o Integration of causal inference with transformer architectures

Software Architect | Sup AI | August 2024 – Present
· Responsible for all software development and cloud infrastructure
· Deployed robust AI infrastructure to power chat and content generation
· Implemented ensemble method with multiple LLMs, search, and RAG

Founder/CEO | UCode | February 2012 – December 2018
UCode teaches kids and teenagers Computer Science
· Over 10,000 students taught
· $2.5 million raised from Bloomberg Beta, Idealab, DFJ Frontier, High Line Venture Partners, Fred Wilson, Brian Lee, and Klaus Schauser

· Taught at 7 in-person centers and 20 schools in Southern California and New York
· HTML/CSS/JavaScript, Elm, Computer Architecture, Swift, and Haskell curriculum

Founder/Chairman | OpenGen | August 2010 – January 2012
Created genealogy data interoperability and preservation standards

Founder/CEO | AppleTree.com | January 2008 – January 2012
· Crowdsourced one global family tree
· $1.1 million raised from DFJ Frontier and Klaus Schauser
· Grew tree to 50 million people from users

Founder/CEO | NewServers.com | April 2001 – September 2007
eBusiness consulting firm
· Initially developed software for customers under AccelerateBiz.com
· Partnered with BEA Systems to provide solutions on BEA's WebLogic Server
· Helped DHL improve international tracking and management system
· Evolved to focus on hosting to manage and maintain customer software development projects
· Remained profitable every month from day 1 with no funding
· Maintained consistent month to month growth since inception
· Grew hosting infrastructure to include over 400 enterprise servers
· First company to offer bare metal servers by the hour
· Developed system and infrastructure to automatically provision custom bare metal servers
· Sold company in September 2007

CTO | Aelogis Corporation | August 2000 – April 2001
E-commerce platform merchandised by us for organizations like Ocean Drive Magazine
· Sold our products through customers' websites
    o Managed how books, music, movies, and other products were presented, promoted, and priced
· Team included former CEO of Bloomingdale's and Macy's
· Brought core technology development in house resulting in savings of:
    o Over $2 million in app server licensing and custom development
    o 2 and a half years of software development time
    o Over $27,000 per month in managed hosting fees
· Architected, developed, and maintained e-commerce platform selling 350,000 different SKUs through 60 sites using Weblogic within 2 months
· Developed data importing, cleaning, manipulation, and exporting system to deal with large quantity of SKUs coming from distributors in real-time and files from CardoNet Marketplace, Oracle 8i, Microsoft SQL Server 2000, Access 2000, XML, and nonstandard text formats

Co-Founder/Co-CEO | General Transactions | August 1999 – August 2000
Complete customizable turnkey e-commerce systems
· Developed web-based system for customers to sell their products
    o Created advanced inventory and order management software

- $1.7 million of seed capital raised
- Intimately involved in all areas from recruiting to software development

Teaching Experience

Teaching Assistant | UCLA | Winter 2024, Winter 2023, and Winter 2022
- Learning and Reasoning with Bayesian Networks
- UCLA graduate course: CS 262A
- Professor Adnan Darwiche

Teaching Assistant | UCLA | Fall 2021
- Automated Reasoning: Theory and Applications
- UCLA graduate course: CS 264A
- Professor Adnan Darwiche

Causal Inference Teacher | Ad Astra School @ SpaceX | August 2019 – June 2020
- Rigorous Causal Inference class for 13- to 14-year-old students
    - Thorough introduction with "Causal Inference in Statistics: A Primer" book
    - Created instructional materials to scaffold book and make it accessible
- Psychology of Decision Making class for 12- to 14-year-old students
    - Biases and decision making with Kahneman's "Thinking, Fast and Slow" book
    - Created instructional materials to support book and rational thinking
- Worked with Alliance for Decision Education to offer classes to other schools

Computer Science/Calculus Teacher | Ad Astra School @ SpaceX | August 2016 – June 2019
- Rigorous Computer Science class for high-achieving 11- to 14-year-old students
    - Combinatory Logic and Lambda Calculus with "To Mock a Mockingbird" book
    - Thorough introduction to the Haskell programming language
    - Capstone project is a complete ray tracer with no external library dependencies
- Rigorous proof-based Calculus class for high-achieving 11- to 14-year-old students
    - Trigonometry, AP Calculus BC, and more combined in 1 school year
    - All students scored 5s on AP exams except for a single score of 4
- Taught Nand2Tetris (www.nand2tetris.org) parts I and II to 10- to 12-year-old students
- Taught Scheme and UCode curriculum to all 7- to 14-year-old students

Research Labs

Practical Causal Inference (PCI) Lab | UCLA | April 2022 - Present
- Web Developer and Co-Manager
- Directors: Chad Hazlett and Onyebuchi Arah
- https://www.practicallycausal.com

Cognitive Systems Laboratory | UCLA | September 2021 – March 2025
· Graduate Student Researcher
· Director: Judea Pearl

Publications

Journal & Conference Papers
· Ricky Ma, **Scott Mueller**, Thomas Icard, and Tobias Gerstenberg. "Making good decisions by inferring counterfactual probabilities from experimental and observational data," *Forthcoming*, January 2025.
· **Scott Mueller** and Judea Pearl. "The Meaning of 'Harm' in Personalized Medicine – An Alternative Perspective," *American Journal of Epidemiology*, November 2024. https://doi.org/10.1093/aje/kwae441.
· Chi Zhang, Ang Li, **Scott Mueller**, and Rumen Iliev. "Causal AI Framework for Unit Selection in Optimizing Electric Vehicle Procurement," *AAAI 2024 Workshop on Sustainable AI*, Vancouver, Canada, February 2024.
· **Scott Mueller** and Judea Pearl. "Monotonicity: Detection, Refutation, and Ramification," *2023 RAND Center for Causal Inference (CCI) Symposium*, August 2023.
· **Scott Mueller** and Judea Pearl. "Personalized Decision Making – A Conceptual Introduction," *Journal of Causal Inference*, vol. 11, no. 1, January 2023. https://doi.org/10.1515/jci-2022-0050.
· Ang Li, **Scott Mueller**, and Judea Pearl. "ϵ-Identifiability of Causal Quantities," January 2023.
· Andrew Forney and **Scott Mueller**. "Causal Inference in AI Education: A Primer," *Journal of Causal Inference*, vol. 10, no. 1, pp. 141–73, July 2022. https://doi.org/10.1515/jci-2021-0048.
· **Scott Mueller**, Ang Li, and Judea Pearl. "Causes of Effects: Learning Individual Responses from Population Data," In *Proceedings of the Thirty-First International Joint Conference on Artificial Intelligence*, pp. 2712–18. Vienna, Austria: International Joint Conferences on Artificial Intelligence Organization, July 2022. https://doi.org/10.24963/ijcai.2022/376.

Articles
· **Scott Mueller** and Judea Pearl. "Personalized Decision Making under Concurrent-Controlled RCT Data," *Causal Analysis in Theory and Practice*, March 2023. https://causality.cs.ucla.edu/blog/index.php/2023/03/17/personalized-decision-making-under-concurrent-controlled-rct-data/.
· **Scott Mueller** and Judea Pearl. "Personalized Decision Making," *Causal Analysis in Theory and Practice*, April 2021. https://causality.cs.ucla.edu/blog/index.php/2021/04/29/personalized-decision-making/.
· **Scott Mueller** and Judea Pearl. "Which Patients Are in Greater Need: A Counterfactual Analysis with Reflections on COVID-19," *Causal Analysis in Theory and Practice*, April 2020. https://causality.cs.ucla.edu/blog/index.php/2020/04/02/which-patients-are-in-greater-need-a-counterfactual-analysis-with-reflections-on-covid-19/.

- **Scott Mueller** and Judea Pearl. "Fréchet Inequalities – Visualization, Applications, and History," *Causal Analysis in Theory and Practice*, November 2019. https://causality.cs.ucla.edu/blog/index.php/2019/11/05/frechet-inequalities/.

Skills & Abilities

- Causal Inference
- Software development
- Network architecture
- Distributed systems

- Entrepreneurship
- Project management
- Strategic planning
- Mentorship and training

Activities & Interests

Health & fitness, family, reading, tennis, and coding (for fun)