

Scott A. Mueller

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Professional Summary

Versatile AI researcher and software engineer with expertise in decision making and counterfactual reasoning, seeking an AI Engineering and Research role to apply and advance cutting-edge research in AI and LLM products. Under the mentorship of Turing Award winner Judea Pearl, I have developed deep expertise in causality and its applications to machine learning. My career encompasses impactful research, software development & architecture, and entrepreneurship. I am driven to attain authoritative expertise in LLMs and AI architectures, aiming to bridge causal inference with AI systems to achieve human-level reasoning and beyond.

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
 - Comprehensive causal and counterfactual reasoning benchmarks
 - 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
 - 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:
 - Over \$2 million in app server licensing and custom development
 - 2 and a half years of software development time
 - 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
 - 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>

- 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)