Justin Cosentino // justin@cosentino.io // cosentino.io // github.com/justincosentino 01.2024

INDUSTRY EXPERIENCE

Google Research: Health AI Genomics
Senior Software Engineer 11.2022 - Present
Software Engineer 09.2020 - 10.2022
Software Engineering Intern 07.2019 - 10.2019

- Developed novel ML-based phenotyping techniques that enable large-scale genomic discovery for lung function and eye morphology, resulting in first-author publications in Nature Genetics and the American Journal of Human Genetics as well as US patent applications (US Patent App. 17/770,174, two others pending)
- Led modeling efforts for those ML-based Phenotyping projects with 10+ contributors spanning multiple institutions; deeply involved in all aspects of designing experiments, preprocessing data, developing pipelines, training models, running model inference, performing downstream analyses, and preparing manuscripts
- Co-leading modeling efforts for multimodal Consumer Health LLMs; deeply involved in researching new techniques for integrating clinical data modalities into LLMs, preprocessing data, building training and inference pipelines, and finetuning PaLM and Gemini base models

Uber Advanced Technologies Group (ATG)
Research Intern 01.2020 - 06.2020

- Performed machine learning and self-driving vehicle research under the supervision of Professor Raquel Urtasun
- Focused on mechanisms for propagating uncertainty estimates through end-to-end neural motion planners

Tsinghua Statistical Artificial Intelligence and Learning Lab (**TSAIL**)
Graduate Researcher 09.2018 - 07.2020

- Worked on methods for combining uncertainty estimates and generative networks to improve classification performance and studied the relationship between adversarial robustness and sparsity under the supervision of Professor Jun Zhu, resulting in first-author conference and workshop publications at NeurIPS 2019

Salesforce
Senior Software Engineer 07.2017 - 06.2018
Software Engineer 07.2016 - 06.2017
Associate Software Engineer 07.2015 - 06.2016
Software Engineering Intern 05.2014 - 08.2014

- Developed new features and re-architected existing functionality for the #1 (Search) and #13 (Lookups) most-used components on the Salesforce platform using Java, JavaScript, HTML, CSS, and in-house frameworks
- As a SWE project lead and Scrum Master for a team of 7 hybrid software engineers, implemented processes that reduced the number of open, high priority bugs by over 50% while maintaining high feature velocity
- 2018 "President's Award" recipient for impact and leadership (top <1%, the most prestigious engineering award)
- 2018 Technology & Product Spring Hackathon winner for solo project (US Patent Apps. 16/264,285, 16/264,267)

National Institute of Standards and Technology (**NIST**): *Research Fellow* 05.2013 - 08.2013

- Researched and presented a novel, closed-form solution for extrinsic LiDAR calibration in mobile robotics
- Developed ROS packages running dead reckoning and simultaneous localization and mapping algorithms

EDUCATION

Tsinghua University: *MS Computer Science* 09.2018 - 07.2020

- GPA: 3.90/4.00
- Thesis: *On the Robustness of Deep Learning*, advised by Professor Jun Zhu

Swarthmore College: *BA Computer Science with a minor in Mathematics* 09.2011 - 06.2015

- GPA: 3.89/4.00 in major, 3.72/4.00 overall
- Member of Sigma Xi (the Scientific Research Society) and the Swarthmore College Computer Society
- Teacher's Assistant for Introduction to Computer Science (S13, S14, F14) and Computer Systems (F13)
- Grader for Linear Algebra (S13, F14), Artificial Intelligence (S15), and Computer Systems (S15)

SELECTED PUBLICATIONS // cosentino.io/google_scholar

Journal

- *Inference of COPD with deep learning on raw spirograms identifies novel genetic loci and improves risk models*, {J Cosentino*, B Behsaz, B Alipanahi, ZR McCaw}, seven others, and F Hormozdiari*, Nature Genetics, 2023.
  Reviewer's Choice Award (top 10%) @ the American Society of Human Genetics (ASHG) Annual Meeting 2021.
- *Large-scale ML-based phenotyping significantly improves genomic discovery for optic nerve head morphology*, {B Alipanahi*, F Hormozdiari, B Behsaz, J Cosentino, ZR McCaw}, eight others, {AP Khawaja, and CY McLean*}, American Journal of Human Genetics (AJHG), 2021.

Conference

- *Generative Well-intentioned Networks*, J Cosentino and J Zhu*, Neural Information Processing Systems (NeurIPS), 2019.

Workshop and Preprints

- *Multimodal LLMs for health grounded in individual-specific data*, {A Belyaeva, J Cosentino}, five others, {CY McLean, and NA Furlotte*}, Oral Presentation, Machine Learning for Multimodal Healthcare Data Workshop @ ICML 2023.
- *An Empirical Study of ML-based Phenotyping and Denoising for Improved Genomic Discovery*, B Yuan, CY McLean, F Hormozdiari, and J Cosentino*, The Learning Meaningful Representations of Life Workshop @ NeurIPS 2022.
- *The Search for Sparse, Robust Networks*, {J Cosentino, F Zaiter}, {D Pei*, and J Zhu*}, The Safety and Robustness in Decision Making Workshop @ NeurIPS 2019.

Briefings and Blog Posts highlighting our work

- Multimodal medical AI, Google AI Blog, 2023.
- Deep learning model improves COPD risk prediction and gene discovery, Nature Genetics Research Briefing, 2023.
- An ML-based approach to better characterize lung diseases, Google AI Blog, 2023.
- Improving Genomic Discovery with Machine Learning, Google AI Blog, 2021.

{ } denotes equal contribution
* denotes corresponding authors