Vin Sachidananda

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Citizenship: USA
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Overview

Investing ○ Principal at Two Sigma Ventures leading investments in Seed-Series B stage working on AI, B2B SaaS, Data Infrastructure, and Developer Tools. Built out fund theses on AI and data infrastructure investment practices.

Startups ○ 4 years of engineering leadership roles on founding teams at venture backed startups spun out of MIT (Celect acq. Nike) and Stanford (Clockwork.io). Worked under professors at Stanford, MIT to build out SaaS and infrastructure products from pre-seed to Series A.

Research ○ NLP PhD from Stanford. Conducted research on LLMs/Transformers since their inception and precursors (word embeddings, autoencoders) before that. Authored peer reviewed research in all of the top AI (NeurIPS, ICLR, ICML) and NLP (ACL, EMNLP) conferences.

Industry ○ 2 years of experience at Google AI, Apple AI/ML and Amazon Science building, researching, and productionalizing early LLM products with large research teams.

Education

Sept '16-Dec '22 **Ph.D. Electrical Engineering**, *Stanford University*, Stanford, CA.
Thesis: *Inner Product Matrix Algorithms for Transfer and Adaptation of Language Representations*
Research Interests: Artificial Intelligence, Natural Language Processing, Representation Learning

Sept '16-Apr '21 **M.S. Electrical Engineering**, *Stanford University*, Stanford, CA.
Concentration: Optimization, Control, and Signal Processing

Coursework: Theory of Probability, Metric Embeddings, Statistical Learning Theory, Convex Optimization (I, II), Statistical Signal Processing, Reinforcement Learning, Machine Learning, Artificial Intelligence, Theories of Deep Learning, Inference in Networks, Algorithmic Trading, Fourier Analysis, Cognition and Computation

Aug '09-May '13 **B.S. Mechanical Engineering with Honors**, *University of Maryland*, College Park, MD.
Concentrations: Control and Dynamical Systems

Technical Coursework: Probability, Statistics, Control & Optimization (I, II), Dynamics & Controls, Statistical Process Control, Differential Equations, Physics (E&M + Quantum), Electronics (I, II)

Non-technical Coursework: Venture Finance, Fundamentals of Technology Start-Up Ventures, Opportunity Analysis in Technology Ventures, Marketing High-Technology Products

Awards & Honors

Oct. 2018 InSITE Fellowship in Innovation, Entrepreneurship, and Venture Capital, *Stanford University*
Sept. 2016 Leland F. and Margaret Perry Johnson Doctoral Fellowship, *Stanford University*
Aug. 2011 Clark Corporation Engineering Merit Scholarship, *University of Maryland*
Aug. 2009 Dean's Merit Scholarship, *University of Maryland*
Aug. 2009 Honors College (Top 5% of incoming students), *University of Maryland*

Startup & Venture Capital Experience

Apr '23-Present **Two Sigma Ventures**, Principal, San Francisco, CA.
○ Leading early stage (Seed-Series B) investments in technology startups with a focus on Artificial Intelligence/Machine Learning, B2B SaaS, Infrastructure, and Developer Tools. Built out fund theses and directive for AI and data infrastructure investment practices.

○ Sourced and/or diligenced deals across AI, Data Infrastructure, Security, and Developer Tools. Investments include Cerby's Series A, Distributional's Series A, Etched's Series A, Objective's seed, SDF's seed, and Nullify's seed. Additionally, board involvement and/or support for Zeromatter and Okteto.

Jan '19-Dec '19 **ClockWork Systems, Inc.**, Founding Engineer (4th employee), Palo Alto, CA.
- Built analytics tools at my PhD advisor's startup, https://www.clockwork.io, focused on machine learning based high precision clock synchronization with applications in financial exchanges and distributed computing.

Jan '18-Apr '18 **Uncork Capital**, Consultant (AI investments), San Francisco, CA.
- Conducted technical due diligence and competitive landscape analysis of early-stage Conversational AI companies with partners at Uncork Capital through the InSITE Fellowship program.
- Sourced, screened and made investment recommendations for seed and Series A stage Conversational AI startups in presentations to the investment committee.

June '13-July '16 **Celect Inc.**, *[Acquired by Nike Inc.]*, Founding Lead Engineer (2nd employee), Boston, MA.
- First engineering hire (second employee) at a machine learning startup founded out of MIT focused on optimizing assortment planning and recommendation systems in retail. Worked under Profs. Vivek Farias and Devavrat Shah at MIT to commercialize state-of-the art machine learning algorithms for choice modeling. Co-led all engineering and product management from pre-seed to Series A funding stage.
- Designed algorithms and optimization tools used by Fortune 100 retailers for buying, planning, and allocation decision-making on hundreds of millions of dollars in spend and resulted in significant attributable revenue lifts (>7%). Patent awarded for this work: *US 2018 / 0032934 A1*.
- Designed self-supervised machine learning models to predict price elasticity in large-scale e-commerce platforms. These models enable retailers to optimize real-time pricing decisions and understand interactions between distinct offerings in their catalog. Researched iterative low-rank SVD approximations for large-scale matrix completion in a sparse data setting.
- Experience building large-scale algorithms and computational systems for Natural Language Processing, Convex Optimization (LP, QP, SDP), Computer Vision, Decision/Choice Modeling, Matrix/Tensor Completion, Dimensionality Reduction, Estimation, and Feature Selection.

Industry Experience

Feb '21-July '21 **Apple AI/ML**, Research Scientist (LLMs), Siri Understanding, Remote.
- Researched multi-modal representation learning and built joint speech and language transformer models for applications in speech processing tasks used by billions of users in production. Improved state of the art performance in numerous emotion recognition tasks.

June '20-Jan '21 **Amazon Science**, Research Scientist (LLMs), AWS AI, Remote.
- Researched transfer learning, robustness and long term dependencies in transformer models. Applications include efficient domain adaptation of contextual representations for use in downstream models, work was published at the SustaiNLP workshop at EMNLP 2021.

June '18-Sept '18 **Google AI**, Research Scientist (Language Models), Mountain View, CA.
- Researched novel deep learning based language modeling architectures for Conversational Response Generation. Applications include dialog response prediction in Gmail, Android, and Enterprise Customer Support.

July '17-Sept '17 **Google AI**, Research Scientist (Stochastic Optimization), Mountain View, CA.
- Researched Machine Learning methods for non-stationary time-series prediction and risk-sensitive optimization methods with application to improving Google Cloud APIs.

June '12-Aug '12 **Goldman Sachs**, Summer Analyst, New York, NY.
- Designed and wrote stochastic optimization algorithms for resource allocation of Goldman's private elastic computing cloud; algorithms projected a decrease in spend of 10% under business constraints.

Aug '09-June '10 **NASA**, Product Manager Intern, Greenbelt, MD.
- Worked on data visualization, user interface, and user experience design for Climate@Home cloud computing project. Engaged with senior managers to define product vision, strategy, and roadmap.

Aug '08–Aug '09 **NASA**, Research Assistant (Climate Modeling + Prediction), Greenbelt, MD.
- Spent half the day during my senior year of high school researching computational models used to predict the effects of solar and atmospheric conditions on climate change.
- Wrote research thesis on 'A Study of Climate Response to Solar Irradiance Cycles' and presented findings at NASA research symposium.

Publications & Patents

Dissertation, 2022 — **Vin Sachidananda**. *Inner Product Matrix Algorithms for Transfer and Adaptation of Language Representations*. Stanford University PhD Dissertation, 2022. { *Stanford University Libraries* }

ICML, 2023 — **Vin Sachidananda**, Ziyi Yang, and Chenguang Zhu. *Global Selection of Contrastive Batches via Optimization on Sample Permutations*. In International Conference on Machine Learning (ICML), 40, 2023. { *PMLR | Talk+Slides | arXiv | Code* }

arXiv, 2022 — **Vin Sachidananda**, Shao-Yen Tseng, Erik Marchi, Sachin Kajarekar, and Panayiotis Georgiou. *CALM: Contrastive Aligned Audio-Language Multirate and Multimodal Representations*. arXiv, 2022. { *arXiv* }

SustaiNLP, EMNLP 2021 — **Vin Sachidananda**, Jason Kessler, and Yi-An Lai. *Efficient Domain Adaptation of Language Models via Adaptive Tokenization.* In SustaiNLP: Workshop on Simple and Efficient Natural Language Processing at EMNLP. 2021. { *ACL Anthology |Talk+Slides | arXiv* }

ICLR, 2021 — **Vin Sachidananda**, Ziyi Yang, and Chenguang Zhu. *Filtered Inner Product Projection for Crosslingual Embedding Alignment.* In International Conference on Learning Representations (ICLR), 2021. { *OpenReview | Talk+Slides | arXiv | Code* }

ACL, 2019 — Ziyi Yang, Chenguang Zhu, **Vin Sachidananda**, and Eric Darve. *Embedding Imputation with Grounded Language Information.* In Proceedings of the Association for Computational Linguistics (ACL), 57, 2019. { *ACL Anthology | arXiv | Code* }

NeurIPS, 2018 — Zi Yin, **Vin Sachidananda**, and Balaji Prabhakar. *The Global Anchor Method for Quantifying Linguistic Shifts and Domain Adaptation.* In Advances in Neural Information Processing Systems (NeurIPS), 32, 2018. { *Proceedings | arXiv | Code* }

US Patent, 2018 — Juan Manuel Chaneton, Gregory Yu, **Vin Sachidananda**, and Vivek Farias. *Assortment Optimization.* Publication Number: US 2018 / 0032934 A1. { *Patent Document* }

Semantic Scholar, 2017 — **Vin Sachidananda** and Emma Brunskill. *Online Learning for Causal Bandits*, Semantic Scholar, 2017. { *Paper | Poster* }

Teaching Experience

Fall 2021 — **CS229/STATS229 Machine Learning**, *Teaching Assistant*, Stanford University.
Taught graduate-level course on machine learning covering topics across statistical and deep learning including Kernels, SVMs, Learning Theory, Neural Network Fundamentals, Self-Supervised Learning and Reinforcement Learning. Led teaching accommodations and instruction for students with disabilities and mentored student projects.

Fall 2011 — **ENES221 Dynamics and Controls**, *Teaching Assistant*, University of Maryland.
Taught mathematical concepts underlying motion and trajectories of complex systems and particles. Held office hours, graded assignments, and conducted tutoring sessions.

Fall 2011 — **HEIP143 Entrepreneurship and Innovation**, *Teaching Assistant*, University of Maryland.
Taught 150 students venture finance, business development, and opportunity analysis. Mentored students in entrepreneurial pursuits, held office hours, and graded assignments.

Technical Skills & Service

Programming — Python, C++, Java, Go

ML + Opt — PyTorch, TensorFlow, scikit-learn, PuLP, CVXPY, CBC, NumPy, SciPy

UI + UX — HTML, CSS, JavaScript, D3.js, Adobe Creative Suite (Ps, Ai)

Systems — AWS, GCP, Kubernetes, Elasticsearch, Spark, Hadoop, PostgreSQL, MySQL, SQLite

Service — Reviewer for NeurIPS {'21, '22, '23, '24}, ICLR {'22, '23, '24}, ICML {'22, '23, '24}, COLM {'24}

Personal Interests

Tennis, Skiing, Squash, Hiking, Guitar, Poker.