Casey Meehan

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Education

- **University of California, San Diego** — La Jolla, CA
  PhD Student in Machine Learning Theory — *Third Year*
  - **Semi-Random Shuffling for Resistance to Dependence in Local Privacy** (under review)
  - **Local Privacy for Location Traces** (AISTATS 2021)
  - **Nonparametric tests for generative model generalization** (AISTATS 2020)
- **Harvard University** — Cambridge, MA
  M.S. Computational Science & Engineering — *Aug 2017 – May 2018*
  - **Machine Learning Theory & Methods**
  - **Stochastic/Numerical Computation Methods**
- **Brown University** — Providence, RI
  Bachelor of Science in Electrical Eng. & Signal Processing — *Aug. 2011 – May 2015*
  - **Computational Statistics**
  - **DSP**

Experience

- **PhD Research** — La Jolla, CA
  Machine Learning Privacy and Generalization — *Sept 2018 – Present*
  - **Semi-Random Shuffling for Local Privacy:** Generalized the LDP shuffling framework to non-uniform shuffling enabling trend learning. Formalized the inferential privacy guarantee given by shuffling, and designed corresponding non-uniform shuffling mechanism (under review).
  - **Local Privacy for Location Traces:** Local privacy framework for sequences of highly dependent data, accentuating the balance between utility and realistic dependence. Developed SDP for optimizing covariance of added noise to thwart inference of any Gaussain process adversary. Published in AISTATS 2021.
  - **Nonparametric Hypothesis Test for Evaluating Generative Models:** Developed novel hypothesis testing framework for evaluating the generalization of generative models along with an efficient test statistic. Results are promising for KDEs, VAEs, and GANs. Published in AISTATS 2020.
- **Masters Work** — Cambridge, MA
  Harvard CSE Masters Projects — *Aug 2017 – May 2018*
  - **Inference Model for Pollution Prediction** Collaborated with Harvard School of Public Health to develop time-series models capable of predicting PM2.5 levels anywhere in the continental U.S.. Compared RNNs, CNNs, Random Forests, Gaussian Processes and more.
  - **Synthetic Data for Privacy:** Performed fundamental comparison of utility for simple ML tasks performed on differentially private vs. synthetic datasets.
- **Analog Devices** — Norwood, MA
  Analog ASIC Designer — *Aug 2015 - Aug 2017*
  - **Ultra Low Power $\Delta\Sigma$-ADC:** Design, simulation, and layout of high-precision acoustic noise cancellation codec – lowest power in its class. Currently in production for multiple brand noise-cancelling applications.
  - **1st Prize, Global Entrepreneurship Challenge:** Pitched to executive staff a new business concept using sensing to guarantee accountability on behalf of law enforcement's surveillance choices. Received funding and co-led a small team of engineers/designers in prototyping and market research.
- **Brown Space Engineering** — Providence, RI
  Electronics System Leader of Brown's first satellite — *Sep 2012 – May 2015*
  - **Led Electronics Design & Secured NASA Launch:** Led team of 10 students in design of flight HW/SW in an experimental micro-satellite. Submitted successful application to NASA's CSLI launch program. Successful launch in 2018.
- **Jet Propulsion Laboratory** — Pasadena, CA
  Small Satellite Group — *Summer 2012 and 2013*
  - **Orbital Analysis:** Developed simulation and feasibility analysis of sun-synchronous 8-satellite imaging constellation.
- **Other stuff I'm figuring out:** surfing, français