Jeremy Irvin

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Education

***Stanford*, M.S. Computer Science, 4.00/4.00 GPA** **Sep 2016 - June 2018**
Artificial Intelligence Track

***UC Santa Barbara*, B.S. Computer Science and B.S. Mathematics, 3.97/4.00 GPA** **2012 - June 2016**
College of Creative Studies (CCS)

Publications

- Rajpurkar, Pranav*, **Irvin, Jeremy***, et al. "MURA Dataset: Towards Radiologist-Level Abnormality Detection in Musculoskeletal Radiographs." *arXiv preprint arXiv:1712.06957* (2017).
- Rajpurkar, Pranav*, **Irvin, Jeremy***, et al. "CheXNet: Radiologist-Level Pneumonia Detection on Chest X-Rays with Deep Learning." *arXiv preprint arXiv:1711.05225*(2017). [JAMA submission in progress]
- **Irvin, Jeremy**, Daniel Spokoyny, and Fermín Moscoso del Prado Martín. "Dynamical systems modeling of the child–mother dyad: Causality between child-directed language complexity and language development." *Proceedings of the 38th Annual Conference of the Cognitive Science Society, Austin, TX.* 2016.
- Spokoyny, Daniel, **Jeremy Irvin**, and Fermín Moscoso del Prado Martín. "Explicit Causal Connections between the Acquisition of Linguistic Tiers: Evidence from Dynamical Systems Modeling." *ACL 2016* (2016): 73.
- Fermín Moscoso del Prado Martín, **Jeremy Irvin**, Daniel Spokoyny. The properties of children's language are caused by those of their mothers', and vice-versa [submitted to Nature Human Behavior].
- **Jeremy Irvin**, Fermín Moscoso del Prado Martín. Application of Dynamical Systems to Model Human Language Development. Undergraduate Thesis 2016.

* equal contribution

Research Roles

Research Assistant, Stanford **January 2017 -**
Professor Andrew Ng
Research in the Stanford Machine Learning Group: `stanfordmlgroup.github.io`

- Deep Learning for Radiology with Professor Matthew Lungren **September 2017 -**
  - Built models to perform pneumonia detection in frontal-view chest X-rays at the level of radiologists
  - Prepared datasets for public release and developed baseline models for abnormality detection in upper limb musculoskeletal X-rays
- Cardiotoxicity prediction with Memorial Sloan Kettering Cancer Center **August 2017 -**
  - Using historical patient emergency medical record data to build a risk model of chemotherapy-induced cardiotoxicity in cancer patients
- Exploring alignment in convolution-based, character-level NMT **January - April 2017**
  - Experimented with linear and attention-based alignment in convolutional, character-level language correction and neural machine translation

Research Assistant, UCSB **September 2015 - June 2016**
Professor Fermín Moscoso
Undergraduate Senior Thesis

- Applied dynamical systems and causal modeling techniques to linguistic data (using Python and R) to understand the underlying complex nonlinear patterns of language development in children
- First author paper selected for a talk at *Cognitive Science*
- UCSB Undergrad Research Colloquium Best Humanities Research Prize Winner

Teaching

Course Assistant, Stanford **Fall 2017**
`cs229.stanford.edu/`
- Teaching assistant for Stanford's machine learning course (CS229)
- Led weekly section covering external material
- Held numerous office hours and organized midterm logistics

Bootcamp Coorganizer, Stanford **Fall 2017**
`stanfordmlgroup.github.io/projects/aihc-bootcamp-2017/`
- Coorganized a AI in healthcare bootcamp with Professor Andrew Ng and Professor Nigam Shah
- Designed the course material, preprocessed medical datasets, and prepared starter code

Co-lecturer, UCSB **Winter 2016**
`computer-learning.github.io/class/`
- Co-taught a course on ML, NLP, and Deep Learning
- Led 15 course lectures throughout the quarter
- Created over 250 lecture slides

Industry

Data Scientist Intern, Microsoft **Summer 2017**
Market Intelligence
- Trained deep learning intent classifier models using CNTK
- Built a large scale, unsupervised query embedding model to learn information-rich embeddings
- Improved market intellgience platform by integrating deep learning tools into the insights pipeline

Software Engineer Intern, Microsoft **Summer 2016**
Bing Predicts
- Created a model to predict the MTV Video Music Awards's using Bing search and social data
- Wrote Python for scraping, feature engineering, model testing, and MART Gradient Boosting training
- Additionally implemented LSTM's for time series forecasting using Keras and CNTK

Software Engineer Intern, Microsoft **Summer 2015**
Satori (Knowledge Graph) Within Bing
- Developed an algorithm to detect subtle entity relations in an immense ontology and rank them by novelty
- Wrote C# and internal query language as part of an R&D ML pipeline
- Increased run-time by two orders of magnitude, allowing for efficient discovery of the relations