Ilya X Valmianski

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Immigration Status: U.S. Citizen

EDUCATION

Ph.D. Physics 2017
University of California, San Diego
B.S. Biophysics 2009
Summa Cum Laude
University of California, San Diego

EXPERTISE

Natural Language Processing
Transformers, recurrent neural networks, n-gram models
Discrete Data Processing
Deep learning with heterogenous data, boosting and other tree models, linear models
Machine Learning in Healthcare
Supervised and unsupervised modeling of clinical progress notes, analysis of discrete EHR data, explainable machine learning model decisions for clinicians

OTHER INTERSTS

Semisupervised learning
Active learning/weak supervision
Causal inference
Computer vision

LANGUAGES/LIBRARIES

Python ●●●●●
tf.keras ●●●●●
numpy/pandas/sklearn/etc ●●●●●
flask/jinja/streamlit ●●●●○
pytorch lightning/NeMo ●●●○○
sqlalchemy ●●●○○
SQL ●●●●○
Matlab ●●●●○
C/C++ ●●○○○

AWARDS AND HONORS

Inamori Fellowship 2014
Inamori Foundation
Awarded for outstanding physical science graduate research

Provost Award of Excellence 2009
Warren College, UC San Diego
Awarded to the top graduating undergraduate student of the Warren College

EXPERIENCE

Curai Health

Senior Machine Learning Researcher 2021-Present
- Developing natural language understanding models for patient dialogue contextualization, topic modeling, sectioning, and summarization.
- Developing models for clinical decision support recommender systems

Kaiser Permanente

Lead Data Architect (Machine Learning) 2019 – 2021
- Lead the development of a symptom checker, SmartTriage, driven by ML models trained on finding diagnoses extracted from ambulatory progress notes and providing clinical decision support to physicians.
- Developed models for converting patient free text responses to discrete medical concepts.
- Developed models for clinical decision support by combining patient responses with discrete patient history timeseries.

Data Architect (Machine Learning) 2018 – 2019
- Developed a deep learning model for segmenting contextual structure ("sections") in clinical notes. Model deployed to production doing real time inference on >100M clinical notes per year.
- Developed discrete data HCC diagnoses evidence models (predicting thousands of ICD-10 diagnostic codes). Models deployed to production analyzing KP Medicare and ACA patient populations (>1M patients).
- Developed a deep learning model for simultaneous parsing and sentence chunking of clinical notes.
- Developed boosting ensemble models for in-patient readmission

University of California, San Diego

Postdoctoral Research Fellow 2017

Graduate Research Assistant (Physics) 2011 – 2017

Graduate Research Assistant (Neuroscience) 2009 – 2011

SELECTED PUBLICATIONS

I Valmianski, *et al* **"**SmartTriage: A system for personalized patient data capture, documentation generation, and decision support" Preprint https://arxiv.org/abs/2010.09905
I Valmianski, *et al* "Evaluating robustness of language models for chief complaint extraction from patient-generated text" *NeurIPS 2019 ML4H Workshop* https://arxiv.org/abs/1911.06915
I Valmianski, *et al* "Microscopy image segmentation tool: robust image data analysis", *Rev. of Sci. Inst.* 85 (3) pp 33701 (2014)
I Valmianski, *et al* "Automatic identification of fluorescently labeled brain cells for rapid functional imaging", *J. Neurophys* 104 (3) pp1803-1811 (2010)

Overall metrics: >25 publications, >480 citations, h-index: 13
Google Scholar: https://scholar.google.com/citations?user=HsOak4YAAAAJ

Multilingual fluency: English, Russian
Hobbies: hiking, blues dancing