

Vaibhav Pandey

PhD Candidate

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Personal Profile

I am a computer science doctoral student at the University of California Irvine, working with Dr. Ramesh Jain at Social Life Networks Lab. My research is on the development of user models in a health navigation system for guiding lifestyle. I utilize temporal event pattern discovery, Bayesian inference, and Causal inference principles to derive explainable models of user behavior and health. I am proficient in signal processing and utilize supervised machine learning methods to estimate health and exercise performance parameters from data streams.

I have three years of professional experience in predictive modeling and data science projects in Health insurance, Retail chain, and credit risk analysis domains.

Education

PhD Candidate

Advisor: Prof. Ramesh Jain

Computer Science | University of California, Irvine

Sep 2016 - Present

Master of Science

Computer Science | University of California, Irvine

Sep 2016 – Mar 2019

Bachelor of Technology (Hons.)

Computer Science and Engineering | Indian Institute of Technology, Kharagpur

Jul 2008 – Dec 2012

Technical Skills

Areas of Expertise: Machine Learning, Bayesian Modeling, Causal Inference, Signal Processing, Image Analysis, Clustering analysis, Ensemble Modelling, Recommendation Systems

Programming Languages: Python, R, C/C++, Java, JavaScript

Computational Platforms: Hadoop, Spark, PostgreSQL, MongoDB, MySQL

Computational Libraries: SKlearn, Keras, Pandas, Numpy

Web Development: Flask, React JS

Cloud Computing: AWS Elastic Beanstalk, Amazon RDS, AWS Amplify

Work Experience

Graduate Student Researcher (Computer Science)

University of California, Irvine | CA

Apr 2019-Present

- Analyze multi-modal lifestyle data to estimate health parameters using Kalman filtering and supervised learning models.
- Examined pattern discovery in lifestyle events to find recurring habits.
- Apply Causal inference and Bayesian methods for knowledge integration and personalized modeling.

Teaching Assistant (Computer Science)

University of California, Irvine | CA

Sep 2016-Mar 2019

- Coordinated discussion and programming sessions for computer science undergraduate courses.
- Design lecture plans and assignments.

Research Intern (System's Biology)

Jun 2017-Aug 2017

Sage Bionetworks | Seattle | WA (USA)

- Tremor analysis among Parkinson's disease patients using accelerometer data collected from smart phones.
- Clustering analysis of accelerometer data to find prominent tremor patterns.

Senior Research Associate

Dec 2013-Jun 2016

Abzooba India | Kolkata | India

- Identify fraudulent health insurance claims using anomaly detection.
- Calculated the likelihood of providers committing insurance fraud using supervised machine learning.
- Performed clustering analysis for finding cohorts of patients with similar diagnoses and procedures.
- Trained supervised learning models for predicting claim values for individuals in similar diagnosis cohorts.
- Implemented collaborative filtering-based coupon recommendation system on a Hadoop cluster for retail chain customers.

Analyst (Research and Development)

Jul 2013-Dec 2013

Global Analytics India | Chennai | India

- Implemented ensemble techniques (random forest and gradient boosting classifiers) for predicting repayment rates among short-term lending customers in UK.
- Analyzed clusters of customers (K-means and Hierarchical clustering) based on their borrowing and repayment behaviors.

Peer-reviewed Publications

"Event Mining Driven Context-Aware Personal Food Preference Modeling"

Vaibhav Pandey, Ali Rostami, Nitish Nag, Ramesh Jain

6th International Workshop on Multimedia Assisted Dietary Management, in conjunction with ICPR2020 the 25th International Conference on Pattern Recognition, Milan, Italy

"Personal Food Model"

A Rostami, **V Pandey**, N Nag, V Wang, R Jain

Proceedings of the 28th ACM International Conference on Multimedia, 2020, 4416-4424

"Personalized User Modelling for Context-Aware Lifestyle Recommendations to Improve Sleep"

V Pandey, DD Upadhyay, N Nag, R Jain

Proceedings of the 5th International Workshop on Health Recommender Systems (HealthRecSys' 20)

"Personalized User Modelling for Sleep Insight"

Upadhyay, D. D., **Pandey, V.**, Nag, N., Jain, R.

In Proceedings of the 1st International Workshop on Human-centric Multimedia Analysis, 2020 (pp. 13-20).

"Continuous Health Interface Event Retrieval"

V Pandey, N Nag, R Jain

Proceedings of the 2020 International Conference on Multimedia Retrieval (ICMR 2020)

"Respiration rate and volume measurements using wearable strain sensors"

Michael Chu, Thao Nguyen, **Vaibhav Pandey**, Yongxiao Zhou, Hoang N Pham, Ronen Bar-Yoseph, Shlomit Radom-Aizik, Ramesh Jain, Dan M Cooper, Michelle Khine

NPJ digital medicine 2019

“Cross-modal health state estimation”

N Nag, **V Pandey**, PJ Putzel, H Bhimaraju, S Krishnan, R Jain

Proceedings of the 26th ACM international conference on Multimedia 2018, 1993-2002

“Ubiquitous event mining to enhance personal health”

V Pandey, N Nag, R Jain

Proceedings of the 2018 ACM International Joint Conference and 2018 International Symposium on Pervasive and Ubiquitous Computing and Wearable Computers

“Live personalized nutrition recommendation engine”

N Nag, **V Pandey**, R Jain

Proceedings of the 2nd International Workshop on Multimedia for Personal Health and Health Care, 2017

“Pocket dietitian: Automated healthy dish recommendations by location”

N Nag, **V Pandey**, A Sharma, J Lam, R Wang, R Jain

International Conference on Image Analysis and Processing 2017, 444-452

“Health multimedia: Lifestyle recommendations based on diverse observations”

N Nag, **V Pandey**, R Jain

Proceedings of the 2017 ACM International Conference on Multimedia Retrieval

Arxiv Publications

“Atmosome: The Personal Atmospheric Exposome” (Under Review)

H Bhimaraju, N Nag, **V Pandey**, R Jain

medRxiv

“Synchronizing Geospatial Information for Personalized Health Monitoring”

N Nag, **V Pandey**, L Navali, P Mohan, R Jain

arXiv preprint arXiv:1907.10594

“Surface Type Estimation from GPS Tracked Bicycle Activities”

N Nag, **V Pandey**, A Manjunath, A Vaka, R Jain

arXiv preprint arXiv:1809.09745

“Endogenous and Exogenous Multi-Modal Layers in Context Aware Recommendation Systems for Health”

N Nag, **V Pandey**, RC Jain

arXiv preprint arXiv:1808.06468

“Cybernetic Health”

N Nag, **V Pandey**, H Oh, R Jain

arXiv preprint arXiv:1705.08514