Sumedh Anand Sontakke

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Current position

Annenberg Fellow, Viterbi School of Engineering, University of Southern California

Areas of specialization

Machine Learning; Artificial Intelligence; State Representation Learning; Robotics and Autonomous Systems; Causal Inference

Appointments held

April 2020-	Visiting PhD Student, Max Planck Institute for Intelligent Systems
May-Aug 2020	Research Intern, Adobe Media and Data Science Research
May-Aug 2018	Summer Undergraduate Research Fellow, California Institute of Technology
Aug-Dec 2018	Bachelor's Thesis Research, Princeton Neuroscience Institute, Princeton University
Summer 2017	Summer Research Fellow, University of Oxford
2015-2018	Chief Data Scientist, Skyline Labs (Facebook-Start funded)
Winter 2016	Data Engineering Intern, PepsiCo India
2015-2016	Data Science Intern, Recommendations, Wynk Music

Education

2019-present	PhD in Computer Science, University of Southern California
2015 - 2019	Bachelor of Technology in Electrical Engineering, College of Engineering, Pune, India

Grants, honours & awards

2021	Annenberg Project Grant for Causal Curiosity, awarded annually to 10 PhD students across the University for high-impact projects.
2019	Annenberg Fellowship, Viterbi School of Engineering, University of Southern California
2019	Nikola Tesla Scholarship (declined), Columbia University
2018	Simons Foundation Autism Research SURF Fellow, California Institute of Technology
2017	Summer Research Scholarship, SENS Research Foundation, University of Oxford

Publications & talks

2020 **Sontakke S.A.**, Mehrjou A., Itti L., Schölkopf P. Causal Curiosity: RL Agents Discovering Self-supervised Experiments for Causal Representation Learning. International Conference on Machine Learning, 2021 (**short oral**). paper

2020 Roychowdhury S*., **Sontakke S.A.***, Puri N., Sarkar M., Aggarwal M., Badjatiya P., Krishnamurthy B., Itti L. Unsupervised Hierarchical Concept Learning. BabyMind Workshop at Thirty-fourth Conference on Neural Information Processing Systems (NeurIPS) 2020. paper

2019 **Sontakke S.A.**, Lohokare J., Dani R., Shivagaje P. (2019) Classification of Cardiotocography Signals Using Machine Learning. In: Arai K., Kapoor S., Bhatia R. (eds) Intelligent Systems and Applications. IntelliSys 2018. Advances in Intelligent Systems and Computing, vol 869. Springer

2019 Huddar P.,**Sontakke S.A.**. Acquiring Domain Knowledge for Cardiotocography: A Deep Learning Approach, IEEE International Conference on Informatics and Computational Sciences 2019

2018 **Sontakke S.A.** Predicting general intelligence using resting state fMRI data : A machine learning approach, Caltech Undergraduate Research Journal 2018

2017 **Sontakke, S.**, Lohokare, J., Dani, R. (2017, February). Diagnosis of liver diseases using machine learning. In 2017 International Conference on Emerging Trends & Innovation in ICT (ICEI) (pp. 129-133). IEEE.

2017 Lohokare, J., Dani, R., **Sontakke, S.**, Apte, A., & Sahni, R. (2017, July). Emergency services platform for smart cities. In 2017 IEEE Region 10 Symposium (TENSYMP) (pp. 1-5). IEEE.

2017 Lohokare, J., Dani, R., **Sontakke, S.**, Adhao, R. (2017, February). Scalable tracking system for public buses using IoT technologies. In 2017 International Conference on Emerging Trends Innovation in ICT (ICEI) (pp. 104-109). IEEE.

2017 Lohokare, J., Dani, R., **Sontakke, S.** (2017, February). Automated data collection for credit score calculation based on financial transactions and social media. In 2017 International Conference on Emerging Trends Innovation in ICT (ICEI) (pp. 134-138). IEEE.

2017 **Sontakke S.A.**, Machine learning improves attrition rates and cost-effectiveness in drug development, Proceedings of SENS Research Foundation Summer Scholars Conference 2017

Projects

2019 **Causal State Representation Learning** - Approximating causal processes using RNNs and directing machine attention using causal processes. Building RL agents that use causality to draw analogies between the processes they encounter in the environment.

2018 **Multitask Learning for Autonomous Driving** - Collaborating with Prof Jonathan Cohen and Sebastian Musslick at Princeton University to build deep neural nets that generalize across tasks.

2018 **Predicting Human Intelligence from fMRI** - Collaborating with Prof Ralph Adolphs and Dr Julien Dubois to build machine learning models that predict human intelligence from fMRI imaging.

2017 **Machine Learning for Pharma** - Collaborating with Dr David Brindley and Prof Chas Bountra at the University of Oxford to build machine learning models that predict the probability of regulatory success of drug candidates resulting in an estimated increase of 82% (7 billion USD) in the revenue generated per 100 drug candidates.

2016 **Predictive Analytics** - As Chief Data Scientist at Skyline Labs, I successfully led teams which built analytics tools to model risk in healthcare and credit fraud. Also worked on developing Smart City Solutions in public transport (see papers).

2015-16 **Music Recommendations** - As a freshman, built the first cross-regional and cross-language music recommendation for India's biggest music streaming app.