UTKARSH SONI

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EDUCATION

Arizona State University *Aug 2018 - Present*
Doctor of Philosophy (PhD) *Current GPA: 4/4*
Major: Computer Science *Expected Graduation: May, 2024*

Arizona State University *Aug 2016 - June 2018*
Master of Science, Computer Science (MS CS) *GPA: 4/4*
Major: Computer Science

International Institute of Information Technology - Gwalior *August 2011 - April 2016*
Bachelor and Master of Technology. CGPA: 8.36/10
Major: Information Technology

COURSES TAKEN

Artificial Intelligence, Statistical Machine Learning, Data Mining, Data Visualisation, Fundamentals of Statistical Learning, Social Media Mining, Distributed Databases and others.

TECHNICAL STRENGTHS

Languages	Python, R, C, C++, MySQL
Web Technologies	D3.js, JavaScript, JSON, NodeJS, HTML, CSS
Machine Learning Frameworks	Scikit-Learn, Tensorflow, PyTorch, Pandas
Tools	Tableau, Gephi, MATLAB, Git

RESEARCH

- **Soni. U.**, Sreedharan, S., Kambhampati, S. Not all users are the same: Providing personalized explanations for sequential decision making problems. *IEEE/RSJ International Conference on Intelligent Robots and Systems IROS 2021.*
- Sreedharan, S., **Soni, U.**, Verma, M., Srivastava, S., Kambhampati, S. (2020). Bridging the Gap: Providing Post-Hoc Symbolic Explanations for Sequential Decision-Making Problems with Inscrutable Representations. *Accepted in ICLR 2022.*
- Mishra, A., **Soni, U.**, Huang, J., Bryan, C. Why? Why not? When? Visual Explanations of Agent Behavior in Reinforcement Learning. *Accepted in PacificVis 2022*
- **Soni, U.,** Lu, Y., Hansen, B., Purchase, H. C., Kobourov, S., Maciejewski, R. The perception of graph properties in graph layouts. *In Computer Graphics Forum 2018.*
- Chen, H., **Soni, U.**, Lu, Y., Huroyan, V., Maciejewski, R., Kobourov, S. Same stats, different graphs: Exploring the space of graphs in terms of graph properties. *IEEE transactions on visualization and computer graphics 2019.*
- Gopalakrishnan, S., **Soni, U.,** Thai, T., Lymperopoulos, P., Scheutz, M., Kambhampati, S. (2021). Integrating Planning, Execution and Monitoring in the presence of Open World Novelties: Case Study of an Open World Monopoly Solver. *Workshop on Integrated Planning, Acting, and Execution ICAPS 2021.*
- Gopalakrishnan, S., **Soni, U.,** Kambhampati, S. Feature-directed Active Learning for Learning User Preferences. *International Workshop of Explainable AI Planning ICAPS 2019*

- **Soni, U.,** Trivedi, A., Roberts, N. Real-time hand tracking using integrated optical flow and CAMshift algorithm. *Second International Conference on Research in Computational Intelligence and Communication Networks (ICRCICN) 2016.*

WORK EXPERIENCE

ASU Yochan Lab - *Research Assistant* *Jan 2019 - Present*
Advisor: Dr. Subbarao Kambhampati

- Currently working on personalizing human-robot interaction; particularly incorporating human's preferences in a deep learning based reinforcement learning agent.
- Develop a technique for providing personalized explanations to the user for robot's decisions for sequenital decision making problems.

ASU Vader Lab - *Research Assistant* *Jan 2017 - April 2018*
Advisor: Dr. Ross Maciejewski and Dr. Shade Shutters

- Worked on the urban employment tool with technologies like Python and D3. Created multiple websites for government decisions makers that help them analyze multiple aspects of employment data in their region.

ASU- *Graduate Teaching Assistant* *Aug 2018 - Dec 2018*

- Teaching assistant for a graduate level data visualization course.

ACADEMIC PROJECTS

Hot-spot detection in NYC Taxi Trip data

- Applied Getis-Ord statistics on 3D NYC taxi trip data after aggregating pick-up points for each day into space time cubes. The top 50 z-scores were the final hotspots for taxi pickups.
- Used Apache Spark and its MapReduce framework for creating the space time cube and doing further computations on it. The data was stored in Hadoop Distributed File System(HDFS).
- The entire cluster consisted of 4 computers and the entire work load was monitored for report using Ganglia.

USOpen Tennis data analytics

- created a tennis data analytics dashboard to extract out the factors that were most vital to winning Tennis match, revealing interesting patterns like winning return points was much more important than Ace
- Used Tablaeu and R for Exploratory Data Analysis, for finding the most relevant winning factors
- Used D3 to create unique dual encoded bubble chart to display factor significance, and a scatter plot for further verification.

WebMD Analytics

- Extracted multiple layers of information about each WebMD topic, using its question-answer dataset [2011-2015] and created visualization dashboard for the same. Information included topic similarity, topic classifications, topic popularity over the years, and most helpful users in the topic.
- Used python and gensim for text cleaning, analysis, and similarity detection (Latent Semantic Indexing, and Jacaard).
- Entire visualization was created with D3, with further functionalities from jQuery, Bootstrap, HTML5, and Crossfilter.