Arpan Man Sainju

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Summary

- Data Scientist with 4+ years of research experience in developing novel data mining and machine learning algorithms to solve real-world geospatial challenges.

Education

The University of Alabama — Tuscaloosa, AL
PhD, Computer Science — August 2020
Master's in Computer Science — December 2019

Tribhuvan University — Tuscaloosa, AL
B.E in Computer Engineering — December 2011

Relevant Courses: Data Mining, Deep Learning, Database, Data Structure and Algorithms, Statistics

Work Experience

The University of Alabama | Department of Computer Science — Tuscaloosa, AL
Graduate Assistant — August 2015 – Present

- Designed a CNN-LSTM based deep learning framework using Keras for mapping road safety features from street view imagery along road networks and improved the classification performance by 5%.
- Developed a **novel** machine learning model for flood extent mapping using earth observation imagery by incorporating flow dependency constraint and achieved 14% improvement in classification performance.
- Achieved over **50 times** speedup for colocation mining by developing **novel** GPU-based parallel filter and refine strategy-based algorithms.
- Teaching assistant for courses: Data Science, Operating Systems, Cloud Computing, and Database Management System.

National Water Center | Summer Institute 2017 — Tuscaloosa, AL
Summer Research Fellow — June 2017 – July 2017

- Developed a proof-of-concept web application using Openlayers JavaScript library capable of visualizing flood extent and its socio-economic impact.

E&T Co. Ltd. — Saitama, Japan
Senior Software Engineer (Japan Branch) — July 2014 – June 2015

- Led a team to develop fluid-flow simulation software and improved processing time by **9-fold** by implementing parallel Radix sort algorithm.

Software Engineer (Nepal Branch) — January 2012 – June 2014

- Enhanced the fluid-flow visualization software (developed using C++ and OpenGL) by implementing tools to facilitate flow data analysis.
- Supervised two undergraduate projects on realistic rendering and high-speed computation.

Skills and Interests

- Languages: C++, Python, R, CUDA

- Data Mining: Pandas, NumPy, Scikit-learn, Keras, TensorFlow, Spark
- Data Visualization: Matplotlib, Tableau
- Database: MySQL, MSSQL, Oracle, MongoDB
- Version Control: SVN, Git

Selected Projects

Software Interface Design, Team Project The University of Alabama, Fall 2018

- Led team of 3 members; developed a mobile application that can alert the users about the upcoming bills and provide accessible bill payment options.

Data Mining, Individual Project The University of Alabama, Fall 2017

- Evaluated and compared natural language processing algorithms for sentiment analysis using product review data on Amazon and provided detailed analysis of experimental results.

Honor/Awards

- NSF Student Travel Award for SIGKDD 2019 June 2019
- **Outstanding Graduate Researcher** in Computer Science, The University of Alabama April 2019
- Upsilon Pi Epsilon Honor Society for Computer Science April 2018
- Graduate School Travel Award for SSTD 2017 and KDD 2019 July 2017

Selected Publications

- **Arpan Man Sainju**, Wenchong He, Zhe Jiang, Da Yan, "Spatial Classification with Limited Observation Based on Physics-Aware Structural Constraint." Thirty-forth **AAAI** conference on Artificial Intelligence. 2020 (accepted).
- **Arpan Man Sainju**, Zhe Jiang, "Mapping Road Safety Features from Street view Imagery: A Deep Learning Approach." ACM Transaction on Data Science, 2019 (to appear).
- Zhe Jiang, **Arpan Man Sainju, "**Hidden Markov Contour Tree: A Spatial Structured Model for Hydrological Applications." The 25th **ACM SIGKDD** International Conference on Knowledge Discovery & Data Mining, 2019. (Long Presentation, acceptance ratio: 9%).
- Zhe Jiang, Miao Xie, **Arpan Man Sainju**, "Geographical Hidden Markov Tree", IEEE Transactions on Knowledge and Data Engineering (**TKDE**), 2019.
- Zhe Jiang, **Arpan Man Sainju**, Yan Li, Shashi Shekhar, Joe Knight, "Spatial Ensemble Learning for Heterogeneous Geographical Data with Class Ambiguity", ACM Transactions on Intelligent Systems and Technology (**TIST**), 2019.
- **Arpan Man Sainju**, Daniel Aghajarian, Zhe Jiang, Sushil Prasad, "Parallel Grid-based Colocation Mining Algorithms on GPUs for Big Spatial Event Data", IEEE Transactions on Big Data (**TBD**), September 2018.
- **Arpan Man Sainju**, Zhe Jiang, "Grid-based Colocation Mining Algorithms on GPUs for Big Spatial Event Data: A Summary of Results", International Symposium on Spatial and Temporal Databases (**SSTD**), 2017.

Leadership and Volunteering

Alabama Table Tennis Association, UA Tuscaloosa, AL
President August 2018 – July 2019

Nepalese Student Association, UA Tuscaloosa, AL
President August 2018 – July 2019