ADITEYA PANDEY

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Summary

Ph.D. Student (Northeastern University) in Computer Science with a focus on development and evaluation of user-centered visualization tools. Over 5+ years of Software Engineering experience. Additional focus: Data Science and Machine Learning.

Education

Ph.D., Computer Science - Northeastern University, Boston — Expected 2021
B.Tech., Computer Science and Engineering – KIIT University, Bhubaneswar, India — 2013

Skills

Research
User-Centered Design, Qualitative and Quantitative Evaluation, Grounded Theory, Inferential & Descriptive Statistics, Probability Theory, Amazon Mechanical Turk, Latex, Data Wrangling, Applied Machine Learning

Web and Databases
React, Canvas, SVG, Angular 4, Responsive Web Design, Node.js, Firebase, MongoDB

Data Science and Visualization
D3.js, Tableau, SciPy (pandas, NumPy & Matplotlib), scikit-learn, TensorFlow

Programming Languages
JavaScript, Python, Java

Ph.D. Coursework
Information Visualization, Human Computer Interaction, Network Visualization and Graph Theory, Machine learning, Algorithms

Selected Industry Experience

ILLUMIO (SUNNYVALE, CA) — May 2019 – Aug 2019

Member of Technical Staff Intern (Data Visualization)

Segmentrix: A Network Visualization Tool to Develop and Monitor Micro-Segmentation Strategies
Keywords: Network Visualization and Analysis, Network Security, React, Canvas, Software Engineering

- Curated a systematic overview of visualization tasks for micro-segmentation. Developed a visualization system using React framework which allows security analysts to write proactive network security policies. Rendered visualization with Canvas to handle the scale of the data.

TATA CONSULTANCY SERVICES LTD (INDIA) — Aug 2013 – Aug 2016

Researcher (R&D)

Visual Bayesian fusion to navigate a data lake
Keywords: Visualization for Probabilistic Graphical Modelling, Human-Computer Interaction, Software Engineering

- Developed a novel platform for analysis of heterogeneous data sources. Platform supported probabilistic joins for combining uncertain datasets and perform joint analysis. Also, published a research paper.
- Within the platform integrated a novel interactive visualization to evaluate results from Probabilistic Graphical Models. Exemplified understanding of energy usage pattern based on demographics.

Multi-sensor visual analytics supported by machine-learning models
Keywords: Time-Series Visualization, Association Rule Mining Visualization, Machine Learning, Software Engineering

- Transformed static charts into interactive D3.js visualizations to improve the overall interaction and aesthetics.
- Connected timeline visualization with backend machine learning algorithms to enable pattern search in engine data. Supported development of timelines to support visual pattern search queries and in place annotation to discover similar patterns in engine sensor data. Also, published a research paper.

Recent PhD Projects

NORTHEASTERN UNIVERSITY (BOSTON, MA) Sep 2016 – Present

Graduate Research Assistant

CerebroVis

Keywords: Tree and Network Visualization, Medical Domain Knowledge, Software Engineering

- Developed a novel design and algorithm to visualize the network structure of arteries in human brain which effectively diagnoses cerebrovascular diseases including aneurism and stroke.
- Proposed technique judged by radiologists to be effective than traditional diagnostic visualization of brain arteries.

Glyph Evaluation

Keywords: Statistical Evaluation, Information Visualization, Within-Subject Study, Software Engineering

- Developed an online study to determine the most effective visual cue for presenting critical patient information to doctors in medical diagnosis.
- Statistically analyzed responses from a within-subject study to determine if the visual cue had any impact on medical diagnosis. Used results to refine existing models in cognition and perception of information visualization.

Predicting life expectancy for glioblastoma patients

Keywords: Machine Learning, Feature Ranking, SVM, Brain FMRI

- Performed feature extraction on Brain FMRI scans using OpenCV package in Python and used supervised classification algorithms (SVM, Logistic Regression, Naive Bayes etc.) to predict survival in Glioblastoma patients.
- Used a hybrid feature ranking and selection process to identify MRI features most useful for predicting disease.

Publications and Posters: Journal Article (J), Conference Paper (C), Workshop Paper (W), Poster (P)

CerebroVis: Designing an Abstract yet Spatially Contextualized Cerebral Arteries Network Visualization (J)–IEEE *TVCG*	2019
Effect of Glyph Design on Probabilistic Categorization Accuracy (P) - *IEEE Vis Poster*	2019
Segmentrix: A Network Visualization Tool to Develop and Monitor Micro-Segmentation Strategies (P) - *VizSec Poster*	2019
CerebroVis: Network Layout for Visualization of Cerebrovascular Arteries (P) - *IEEE Vis Poster*	2018
Maximizing Resolvable Items: A Mantra for Mobile Visualization (W) - *Mobile Vis Workshop at CHI*	2018
Visual Bayesian fusion to navigate a data lake (C) - *International Conference on Information Fusion (FUSION)*	2016
Multi-sensor Visual Analytics supported by Machine-learning Models (C) - *ICDM DAVA*	2015
Interactive Visual Analysis of Temporal Text Data (C) - *VINCI*	2015
Interactively visualizing summaries of rules and exceptions (W) - *EuroVA*	2014

Awards, Honors and Certification

Best Poster: CerebroVis: Network Layout for Visualization of Cerebrovascular Arteries at *IEEE Vis*	*2018*
First Prize: Spatio-temporal Visual Analytics in collaboration with ACT at IEEE VGTC VPG IDVC	2016
Honorable Mention: User-friendly anomaly detection at VAST Data Challenge	2016
Third Prize: Understanding the labor market at IKDD CODS	2016
First Prize: Data View Challenge at 21st International Conference on Data Management	2016
Patent filed: Interactive Visual Analysis of Rules and Exceptions	2014