Zhichao Xu

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Education

- **University of Utah** — Salt Lake City, UT
  Ph.D. in Computer Science — *Sep. 2020 – Est. 2024*
- **Rutgers, The State University of New Jersey** — New Brunswick, NJ
  MS in Computer Science — *Sep. 2018 – May. 2020*
- **Shanghai University of Finance & Economics** — Shanghai, China
  BS in Applied Statistics — *Sep. 2014 – Jul. 2018*
  BE in Computer Science & Technology (minor) — *Sep. 2015 – Jul. 2018*

Research Experience

- **University of Utah Information Retrieval Lab** — Salt Lake City, UT
  Research Assistant, advised by Prof. Qingyao Ai — *Jul. 2020 - Present*
  - **Research Work**: Top-N Recommendation, Conversational Recommendation
- **Rutgers University CS Dept, WISE Lab** — New Brunswick, NJ
  Research Assistant, advised by Prof. Yongfeng Zhang — *Feb. 2019 - Dec. 2019*
  - **Research Work**: Topics on Computational Economics, Information Retrieval, Recommender System
- **Rutgers University ECE Dept, Multimedia Image Processing Lab** — New Brunswick, NJ
  Research Assistant, advised by Prof. Ivan Marsic, Prof. Randell Burd — *Sep. 2018 - Dec. 2019*
  - **Research Work**: Topics on process tracing, data mining, statistical machine learning

Publications

- **A Zero Attentative Relevance Matching Network for Review Modeling in Recommendation System**, in submission to 43rd European Conference on Information Retrieval (**ECIR 2021**), advised by Prof. Qingyao Ai
- **E-commerce Recommendation Based on Weighted Expected Utility Theory**, in proceedings of In Proceedings of the 29th ACM International Conference on Information and Knowledge Management (**CIKM 2020**), advised by Prof. Yongfeng Zhang, Prof. Qingyao Ai
- **Speech-Based Activity Recognition for Trauma Resuscitation**, in proceedings of IEEE International Conference on Healthcare Informatics (**ICHI 2020**), advised by Prof. Ivan Marsic and Prof. Randell Burd
- **Assessment of Non-Routine Events During Intubation for Pediatric Trauma**, Journal of the American College of Surgeons (**ACS**), Vol 229, Issue 4, advised by Prof. Ivan Marsic and Prof. Randell Burd

Research Projects

- **Conversational Recommendation**: in progress
- **Machine Learning for Economic Analysis (Pytorch)**: In E-commerce, consumers' behaviors are heavily affected by economical motives. I adopted several principles from economics to study consumers' behaviors and built the framework using PyTorch. The framework uses historical browsing/purchase records to construct highly personalized product recommendation lists, outperforms several state-of-the-art recommendation algorithms
- **Zero-shot Entity Linking by Reading Entity Descriptions (Pytorch)**: Extend previous research on Entity Linking to zero-shot. Use pretrained word embeddings (RoBERTa etc.) and design the model structure, pretrain tasks to address the zero-shot EL without alias tables and frequency statistics
- **End-to-End Candidates Retrieval for Entity Linking (Pytorch)**: Parse the Wikidump files and segmented them into passages. Use BM25 for first-stage retrieval and two-tower structure for second-stage reranking. Candidates pool includes all WikiPedia entries
- **Process Mining for Electronic Health Records**: Cleaned data of electronic process log, conducted data analysis and hypothesis testing. Developed a new sampling algorithm to study the convergence of the consensus sequence extracted from process logs which can be applied on multiple downstream tasks

Industrial Experience

- **SAP Lab** Shanghai, China
  Data Analyst Intern (Python, Java, SQL, SAP Leonardo) *Dec. 2017 - Jun. 2018*
  - **Internal Analysis Tool**: Developed an Office Automation Tool, automatically acquiring data, plotting organization chart, generating data report & graphs for data visualization
  - **Development & Testing**: Developed localized functions & APIs in SAP S4 & Leonardo; Wrote a Python data-stream parser to take handle data and did corresponding testing, docs and maintenance
- **Ipsos Market Research** Shanghai, China
  Frontend Development Engineer Intern (HTML, Django, Node.js, Postgre SQL) *Jun. 2017 - Dec. 2017*
  - **Frontend Development**: Implemented Web Crawler to collect data. Deployed report pages for several projects

Course Projects

- **Relational Database Project (SQL, PhP, HTML, CSS)**: Implemented a relational database with frontend pages for entry extraction and visualization
- **Twitter Fake News Detector Chrome Extension (Django, MongoDB, PyTorch)**: Used Bayes & RNN LSTM structure; Implemented Chrome Plugin by CSS, Javascript. Backend is supported by MongoDB and Django
- **Mine Sweeper**: Implemented an agent capable of playing the Mine Sweeping games, can visualize the solving procedure and GUI was included
- **Path Planning & Search**: Constructed 6 normal search algorithms for path-finding in maze including Local Beam Search, Genetic Algorithm; Used Simulated Annealing & random walk as optimization method; The project with GUI can choose the optimum search algorithm for solving the Maze
- **Probabilistic Search**: Implemented a search agent capable of handling both moving and static target; 5 search strategies including Bayesian Posterior Model are implemented
- **Colorizer (PyTorch)**: Replicated state-of-the-art structure for colorizering greyscale images, and trained the model on Images for Medical First-Aid use
- **YelpCamp Project (HTML, JavaScript, Node.js)**: Rebuilt simplified version of YelpCamp with backend server
- **Image Quilting**: Replicated the paper *Image Quilting for Texture Synthesis and Transfer*
- **Texture Synthesis, Object Remover, Image Inpainting & Quilting**: Replicated paper *Image Quilting for Texture Synthesis and Transfer* and *Region Filling and Object Removal by Exemplar-Based Image Inpainting*
- **Camera Calibration**: Replicated the paper *An Efficient and Accurate Camera Calibration Technique for 3D Machine Vision* using Python

Engineering Skills

Programming Lauguage:
Proficient: Python, Matlab, SQL, PhP
Fundamental: C, Javascript, Go
Tools: Pytorch, Tensorflow, Spark, MapReduce, Django, React, Node.js, LaTeX

Honors & Awards

MCM Contest 2018 Honorable Mention
SHUFE 2018 Outstanding Undergraduate Thesis Mention

Language Grades

TOEFL: 107 (S 22, W 27, L 30, R 28)
GRE: 330+3.5 (Q 170, V 160)