

ZHENGXING CHEN

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Education

Northeastern University

PhD, Computer Science, expected 2018.

Beijing University of Posts & Telecommunications

BA, Information Engineering, 2013. GPA: 3.6/4.0 (Top 10%)

Experience

Google Inc.

Network Engineer Intern. Sunnyvale, 2017.6 – 2017.8

Forecast network traffic between Google data centers

Stubhub, eBay Inc.

Data Scientist Intern. Boston, 2016.8 – 2016.11

Optimized ranking of secondary-market ticket search

Electronic Arts

Data Scientist Intern. Redwood City, 2016.5 – 2016.8

Proposed a novel matchmaking system optimized for player engagement

Video Game Lab, Northeastern University

Research Assistant. Boston, 2014.1 - now

Research in game analytics, including player modeling, in-game behavior prediction, outcome prediction, recommendation systems, game AI

Skills

Python, Java, R, SQL

MapReduce, Spark, Hive, MongoDB

Scikit-Learn, Pandas, Tensorflow, Theano, PySpark

Projects

Data Center Network Traffic Forecast

@ Google Inc.

- Design and implement forecast models to project network traffic between Google data centers (Neural Network, ARIMA, Recurrent Neural Network, Curve Fit)
- Design and implement evaluation metrics for forecast performance

Secondary-Market Tickets Ranking

@ Stubhub, eBay Inc.

- Utilized pairwise ranking algorithms to optimize the search ranking of secondary-market tickets. Ticket display effectiveness got 25% boost.
- Utilized log-linear regression model to evaluate tickets' price-performance ratio
- Prototyped a novel pairwise ranking model utilizing side information

Engagement-Optimized Matchmaking

@ Electronic Arts

- Proposed a novel matchmaking system optimized for player engagement
- Utilized graph perfect matching algorithms, skill models and churn models to implement the system prototype
- Ran simulation with 10% more player retained compared to existing methods

Game Avatar Pick Recommendation System

- Designed a novel latent-factor bilinear model to learn game avatar "embeddings" in a low-dimensional space
- Designed and implemented the learning based on supervised information (match outcomes) and unsupervised information (team structures)

- Employed a technique similar to word embedding for the unsupervised learning part
- Similarity, synergy and counter search on game avatars for pick recommendation

Hearthstone Deck Recommendation System

- Designed a Neural-Network based Q-Learning agent for playing a Collectible Card Game (with prioritized experience replay and Double Q-Network)
- Used Temporal-Difference Learning to solve a combinatorial search problem: search the best subset of cards (deck) with the highest win rate from a card pool

Multi-Player Video Game Outcome Prediction

- Designed a latent-factor model to model strengths/weaknesses of players/avatars
- Implemented both local and MapReduce versions of Stochastic Gradient Descent/L-BFGS to train the model by MLE.

Detect Academia Game Community Evolution

- Co-word and co-venue analysis on identify major research themes and distinct communities, with a total of 8,207 articles and 21,552 unique keywords being analyzed.
- Implemented advanced topic modelling to form temporal article clusters in order to understand game community evolution.

Links between Player Real World Profiles and In-Game Actions

- Feature extraction from action sequences using frequent pattern mining algorithms
- Used logistic regression with regularization to predict player real world profiles (e.g., gender, game experience, etc.) based on in-game actions.
- Vice versa, predicted player in-game actions using their real world information.

Graph Mining – Paper Citation Prediction

- Used various algorithms (e.g., Page Rank, TFIDF) to extract features of bibliographical graphs.
- Trained logistic regression model with regularization to predict existence of links in bibliography networks.
- Used MongoDB to store, query and manage 200 GB documents.

Publication

Chen, Z., Xue, S., Kolen, J., Aghdaie, N., Zaman, K.A., Sun, Y. and Seif El-Nasr, M. EOMM: An Engagement Optimized Matchmaking Framework. In *World Wide Web (WWW)*, 2017.

Chen, Z., Sun, Y., Seif El-Nasr M., Nguyen, T. D. Player Skill Decomposition in Multiplayer Online Battle Arenas. In *Meaningful Play*, 2016.

Chen, Z., Seif El-Nasr, M., Canossa, A., Badler, J., Tignor, S., and Colvin, R. Modeling Individual Differences through Frequent Pattern Mining on Role-Playing Game Actions. In *Artificial Intelligence and Interactive Digital Entertainment (AIIDE)*, 2015.

Melcer, E., Nguyen, T. D., **Chen, Z.**, Canossa, A., Seif El-Nasr, M., and Isbister, K. Games Research Today: Analyzing the Academic Landscape 2000-2014. In *Foundation of Digital Games (FDG)*, 2015. **Best Paper**.

Nguyen, T. D., **Chen, Z.**, and Seif El-Nasr, M. Analytics-based AI Techniques for Better Gaming Experience. In *Game AI Pro 2*, 2015. (Book Chapter)