ZEYNEP HAKGUDER

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EDUCATION

University of Nebraska-Lincoln   *August 2017 - December 2020 (Expected)*
PhD in Computer Science, *Machine Learning Specialization*   *Cumulative GPA: 3.969*

EXPERIENCE

Teaching Assistant

Design and Analysis of Algorithms	*Fall 2018 —*
Introduction to Machine Learning	*Summer 2018*
Data Structures and Algorithms	*Summer 2017 & Spring 2018*
Introduction to Python Programming	*Fall 2017*

Research Assistant   *January 2017-May 2018*

SBBI Lab, Department of Computer Science and Engineering

SKILLS

Programming Languages	Python, JavaScript
Scripting Languages	Bash, AWK, sed, LaTeX, SQL
Deep Learning Libraries	Pytorch, TensorFlow, Keras
Machine Learning & Data Manipulation Libraries	Scikit-Learn, Pandas, NumPy
Visualization	Matplotlib, Seaborn
Operating Systems	Linux
Scientific Computing & Containerization	OSG, Docker
Software & Tools	Emacs, Jupyter Notebooks
Database Systems	MySQL, MongoDB
Web Technologies	Node, Express, React, Redux, REST
Native	React Native

PROJECTS

Research Projects

Computer Vision:
- (Ongoing) Develop and implement methods to identify pig posture. Achieved 98% accuracy. (**TensorFlow**)
- (Ongoing) Develop and implement deep methods for computational jigsaw puzzle solving. (**Test Driven Development, Python, OpenCV**)

Deep reinforcement learning: Contributed to implementation of a reinforcement learning agent in different game environments. Mined agent action data. (**TensorFlow, Keras, AWK**)

Deep semantic hashing: Develop and implement methods to find similarity preserving embeddings of data using locality-sensitive hashing. (**TensorFlow & Keras**)

Deep Generative Models for Optimization Problems: (Ongoing) Develop and implement methods to solve optimization problems. (**PyTorch, TensorFlow**)

Biological molecule target prediction: Predicted binding interactions between biological molecules with Gaussian Mixture Models. (**Scikit-Learn & Pandas**, super computing resources of **OSG**, and **Docker** for containerization)

Side Projects

Machine Learning Web & Native Applications

> ToDo List
> Games: Pong, Simon, Game of Life, Matching Game (**React, Redux**)
> Location-based job search app (**React Native, Redux**)
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> Naive Bayes Classifier, Decision Tree Classifier (ID3)
> Document similarity using Locality Sensitive Hashing

RELEVANT COURSES

> *UNL*
> Pattern Recognition (Deep Learning), Seminar in Deep Learning (3 Semesters)
> Introduction to Machine Learning, Computational Intelligence (Neural Networks, Genetic Algorithms)
> Algorithms for Large Scale Data
> Statistical Methods in Research, Multivariate Statistics, Probability Theory
> *MOOC (Coursera)*
> Improving Deep Neural Networks, Structuring Machine Learning Projects

WORKSHOP & CONFERENCE PRESENTATIONS

> **Workshop on Support Vector Machines,** *University of Nebraska Medical Center*   *2019*
>   Co-organized the workshop, contributed to hands-on session material preparation & presentation.

> **Oral Presentation at International IEEE Conference BIBM,** *Kansas City*   *2017*

PUBLICATIONS

Dong Xu, Eleanor Quint, **Zeynep Hakguder**, Haluk Dogan, Stephen Scott, and Matthew Dwyer. "Constraining Action Sequences with Formal Languages for Deep Reinforcement Learning." (2018).

Zeynep Hakguder, Jiang Shu, Chunxiao Liao, Kaiyue Pan, and Juan Cui. "Genome-scale MicroRNA target prediction through clustering with Dirichlet process mixture model." BMC genomics 19, no. 7 (2018): 658.

Zeynep Hakguder, Chunxiao Liao, Jiang Shu, and Juan Cui. "A new statistical model for genome-scale MicroRNA target prediction." In 2017 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), pp. 101-107. IEEE, 2017.

Zeynep M. Hakguder, Dicle Yalcin, and Hasan H. Otu. "Bioinformatics approaches to single-cell analysis in developmental biology." MHR: Basic science of reproductive medicine 22, no. 3 (2015): 182-192.

ACADEMIC SERVICE

> Subreviewer for IJCAI (International Joint Conferences on Artificial Intelligence)   2018 —