Maziyar Nazari

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EDUCATION

August 2018 -- Dec 2024

Ph.D. in Computer Science, University of Colorado Boulder, Boulder, CO, USA
- Relevant coursework: Deep Learning Specialization, Machine Learning, DevOps, Operating Systems
- GPA: 4/4

Sep 2013 -- Jan 2018

Bachelor of Science in Computer Engineering (IT), University of Tehran, Tehran, Iran
- School of Electrical and Computer Engineering

RESEARCH INTERESTS

- Applied Machine Learning
- Machine Learning for Systems
- Deep Learning Infrastructure

PROFESSIONAL EXPERIENCE

Dec 2024 -- Present

Postdoctoral Research Associate
University of Colorado Boulder, Boulder, CO, US

2022

Ph.D. Machine Learning Research Intern
Uber, San Francisco, CA, US
- Working on matching graph real-time clustering to optimize for metrics such as ETA and Gross Booking using data analysis, graph algorithms and machine learning. Marketplace Matching Intent & Optimization Team

2021

Software Engineering Intern
Apple, Cupertino, CA, US
- Performance analysis and improvement of Sysdiagnose by up to 40% , System Services & Daemons team

2020

Software Engineering Intern
Salesforce, Louisville, CO, US
- Implementing a proxy service for both REST and gRPC calls, intercepting REST and gRPC request/responses to generate stubs for Mocking purpose, Data Manager Setup team

2018 -- 2024

Research Assistant
University of Colorado Boulder, Boulder, CO, US

2016 -- 2018

Teaching Assistant
University of Tehran, Tehran, Iran
- Artificial Intelligence (Skills needed: Python, Algorithms like uninformed search, heuristics, FOL, Graph, CSP, etc)
- Introduction to Computing systems and Programming (Skills needed: C Programming, Assembly)
- Operating Systems and Operating Systems Lab (Skills needed: C Programming, Kernel Programming)
- Computer Networks (Skills needed: SDN, Floodlight, Mininet)
- Computer Architecture (Skills needed: Verilog HDL, Mealy & Moore state Machines, Design Datapath & Controllers)

2016

Data Science Intern
Social Network Lab, University of Tehran, Tehran, Iran
- Implementing a program to analyze news' text and create a news/events timeline

SELECTED PROJECT

AI & Machine Learning

Transparent Hardware Offloaded Resilient Networks for RDMA based Distributed ML Workloads (In submission)
- An efficient and resilient RDMA network architecture for distributed deep learning workloads in datacenters

Optimizing Cloud Configuration Selection for Cost-Effective Distributed Deep Learning Execution (In submission)

- Deep-learning based solution to optimize the cloud configuration selection for distributed deep learning workloads

Incorporating Models of User Frustration into an Operating System via Reinforcement Learning

- Utilized Generative Adversarial Networks (GAN) and semi-supervised deep learning models to predict user frustration based on multi-modal collected data in a study conducted for two weeks on Linux users
- Transfer learning applied to deep reinforcement learning models to optimize OS resource allocation

Prediction and characterization of application power use in a high-performance computing environment

- Re-implementing the paper (with the same title), improved the results using feature engineering techniques and LSTM

Computer Vision Applications

- Built ConvNets to create a mood classifier and identify sign language digits using Tensorflow/Keras API
- Using transfer learning on a pre-trained CNN (MobileNetV2) to build an Alpaca/Not Alpaca classifier
- Implemented object detection on a car dataset using the YOLO model
- NST: Art generation using VGG-19 network pre-trained on ImageNet database

Natural Language Processing Applications

- Used word vector representations and 2-layer LSTM model to build Emojifiers
- Built a Neural Machine Translation model to translate human-readable dates into machine-readable dates using attention mechanism
- Built a speech dataset and implemented an algorithm for trigger word detection ("activate") using GRU

Audio Generation

- Jazz music generation using LSTM and Tensorflow Functional API

Applications, Software Engineering, Internet Engineering

Library System

- Library workflow automation, single-Page web application implemented in Java, using HTML, CSS, Boorstrap, AngularJS, JavaEE, Maven, Git, Tomcat server
  https://github.com/Maziyar-Na/OOAD-2019/tree/master/Final%20Version/Library

Airplane Reservation Web App

- An airplane reservation web app, using MVC, Object Oriented Patterns, HTML, CSS, JS, Bootstrap, AngularJs, JSP, JavaEE, Socket Programming in Java, Tomcat, Log4J, JUnit, Git, Maven, Docker, Kubernetes, Minikube, HSQL DB, Session State, and handling SQL Injection, CSRF issues, and Access Control
- https://gitlab.com/maziar/UT.IE96

Customs Department Software Design

- Course project to automate a Customs Department workflow, Design (prototype, Domain Modeling, System Sequence Diagram, Class Diagram), implementation(C#, SQL Server database), Test(Unit Test, Integration Test)

Systems & Networking

Rootkit Module in Linux

- LKM to intercept Linux kernel predefined syscall and change "ls" command functionality (Kernel version: 4.x)

Microservice Version Updating

- Automated the microservice version updating process, Tools & Techs: Vagrant, Docker, Ansible, Etcd, Registrator, Confd, Nginx, Bash script

Virtual Machine Live Migration

- Virtual machine live migration using OpenStack, NFS and Vsphere.

Synchronization

- Validate and update bank transaction files using shared memory, and mutex lock

PUBLICATION ———

Capturing and Predicting User Frustration to Support a Smart Operating System

Companion Proceedings of the 28th International Conference on Intelligent User Interfaces (IUI), 2023

- Sepideh Goodarzy, Eric Keller, Maziyar Nazari, Eric Rozner, Richard Han, Mark Dras, Young Choon Lee, Deborah Richards

Escra: Event-driven, Sub-second Container Resource Allocation

42nd IEEE International Conference on Distributed Computing Systems (ICDCS), 2022

- Greg Cusack, Maziyar Nazari, Sepideh Goodarzy, Erika Hunhoff, Prerit Oberai, Eric Keller, Eric Rozner and Richard Han

Optimizing and Extending Serverless Platforms: A Survey

8th International Conference on Software Defined Systems (SDS), 2021

- Maziyar Nazari, Sepideh Goodarzy, Eric Keller, Eric Rozner, Shivakant Mishra

SmartOS: Towards Automated Learning and User-Adaptive Resource Allocation in Operating Systems

12th ACM Asia-Pacific Workshop on Systems (APSys), 2021

- Sepideh Goodarzy, Maziyar Nazari, Richard Han, Eric Keller, Eric Rozner

Resource Management in Cloud Computing Using Machine Learning: A Survey

19th IEEE International Conference on Machine Learning and Applications, 2020

- Sepideh Goodarzy, Maziyar Nazari, Richard Han, Eric Keller, Eric Rozner

Software packet-level network analytics at cloud scale

IEEE transactions on network and service management, 2021

- Oliver Michel, John Sonchack, Greg Cusack, Maziyar Nazari, Eric Keller, Jonathan M Smith

Shimmy: Shared Memory Channels for High Performance Inter-Container Communication

USENIX Workshop on Hot Topics in Edge Computing (HotEdge 19), USENIX Association, 2019

- Marcelo Abranches*, Sepideh Goodarzy*, Maziyar Nazari*, Shivkant Mishra, and Eric Keller.

AWARDS & HONORS

July 2019 **USENIX ATC 2019 Grant Sponsored by NSF and VMWare**

2019 USENIX Annual Technical Conference, Renton, WA, USA

August 2018 **Early Career Professional Development Fellowship**

Department of Computer Science, University of Colorado Boulder

Feb. 2018 **Best Undergraduate Project Award**

Department of Electrical and Computer Engineering, University of Tehran

- Build and deploy live migration in cloud environment, using OpenStack

2015 -- 2016 **Ranked 4th among All Information Technology Students**

Department of Electrical and Computer Engineering, University of Tehran

Summer 2013 **Ranked 790th in Nationwide University Entrance Exam for B.Sc. Program**

Among More than 350,000 Participants i.e. in Top 0.2%

SKILLS

Programming Skills & Certificates

Machine Learning Frameworks & Certificates
- TensorFlow, Keras, PyTroch, Pytorch Distributed, Numpy, Scikit-learn
- Coursera: Neural Networks & Deep Learning, Improving Deep Neural Networks, Structuring Machine Learning Projects, Convolutional Neural Networks, Sequence Models

Languages
- C/C++ – Guru
- Java, Python, Objective C, Bash Scripting, C#, SQL, MATLAB, JS

Web Programming & Databases
- HTML, CSS, JS, Angular, Bootstrap, JQuery, MySql, MSSQL, Java EE, Tomcat, JSP, Hibernate, JUnit, Log4J

DevOps & SDN
- Vagrant, Docker, Kubernetes, Docker Compose, ETCD, Prometheus, OpenStack, Ansible, Registrator, CONFD, Nginx, Kolla Project, Mininet, Floodlight, RYU, ODL, GNS3

Tools, IDEs

Tools & IDEs:
- Git, Maven, Visual Studio, Intelij IDEA, XCode, Jupyter Notebook, SQL Server, SQL Server Management Studio, Wireshark, MATLAB