Niloofar Didar

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SUMMARY

- Software developer with expertise in building **web/mobile applications** utilizing OOP languages, **Python, Java, C++, Android,** and **RDBMS (SQL).** Experienced in CI/CD (**Docker**), **RESTful** APIs, Agile Practices, and **DevOps** tools (Git, Jira, Confluence). Strong foundation in **front-end and back-end** technologies and mathematics (linear algebra, statistics), with expertise in collaborating within fast-paced environments for high-quality, maintainable code delivery.

TECHNICAL SKILL

Programming Languages: Java, Python, Android, C++/C#, ASP. Net, Kotlin, JavaScript, CSS, HTML, XML, Ajax, jQuery

Framework and Libraries: Flask, Spring Boot, Visual Studio, Android Studio, Eclipse, IntelliJ, PythonLib (NumPy, Pandas)

API Development: RESTful API, GraphQL, Swagger, YAML

Databases: SQL Server, SQLite, PostgreSQL, RDBMS

Dev tools: Git, GitHub, Gitlab, Docker, Jira, Confluence, Gradle, Linux (Bash/shell script)

Areas Of Expertise

- Distributed Systems
- Web and Mobile apps
- Software Development Lifecycle
- Automated System Testing
- High-Performance Computing
- Mathematical Modeling
- Data Analysis
- ML techniques

PROFESSIONAL EXPERIENCE

Graduate Research Assistant, Wayne State University, Detroit *Aug 2019 – Current*

- Developed an edge-assisted **Android mobile app** framework in **Java** for educational purposes, serving as a foundation for three projects in AI acceleration, performance efficiency and mixed reality.
- Employed **ML techniques** to develop polynomial **optimization** algorithms for performance efficiency, achieving a **16.5%** reduction in energy consumption and **60%** storage cut for mobile apps, surpassing existing schemes.
- Developed a **Java-based** edge server to efficiently execute compute-intensive tasks for users in milliseconds, reducing device power consumption.
- Designed **mathematical** models in Python to predict performance metrics of autonomous systems with over **90%** accuracy, including power usage, user experience, deep learning inference throughput, and user location.
- Integrated Bayesian optimization and AI accelerators (GPU, NPU) into mobile apps to enhance TensorFlow Lite tasks performance, resulting in a **3.5x** improvement in response time and a **49%** increase in user experience.
- Enhanced **profitability** and task allocation rate of Edge-Sharing Systems by **22.8%** and **25%** through implementation of a best-fit algorithm using **Java, and Python** for optimized task distribution among resources.
- Improved mobile **system performance** through offloading and on-device optimization techniques, achieving a trade-off between user-perceived quality and deep learning tasks response time for **92%** of the time compared to alternative methods.
- Created an **autonomous Python tool** utilizing 3D graphic software (Blender) and mathematical models to predict user experience of virtual objects in mobile augmented reality apps.
- Led research projects and mentored over **10** students in **code reviews/**software implementation for over 5 years.

Software/System Engineer Intern, Motional Co., Pittsburgh *May-Aug 2022*

- Developed a **web service** (frontend and backend) using **Flask**, **Python, jQuery, JavaScript, HTML, CSS, and Docker** for analyzing and testing collected data from Hyundai vehicles.
- Implemented **SQLite database system**, and crafted **Queries** for autonomous vehicle data analysis.
- Developed **REST APIs** with **Swagger** facilitating connectivity between the web service and external tools.

Other Projects *March-April 2024*

- Developed a **web service** for retrieving healthcare information from PubMed website as a project assigned by Yale University using **Python, JavaScript, HTML, Swagger, REST API, and Docker.**
- Developed **Spring Boot APIs in** IntelliJ for a product management system using **Java,** and Spring Framework.

Research and Development Engineer, Wireless Networks lab, Shahid Beheshti University**,** Sep *2015-Jan 2018*

- Implemented multi-agent IoT based path recommendation system in fire incidents **for smart buildings using Java**. The results showed a **20.5%** enhancement in people's survival rate compared to similar systems.
- Designed a wireless system using SunSPOT sensors in **Java** and conducted tests to analyze the impact of data perception, communication, transmission, and system architecture on overall energy efficiency.
- Conducted performance analysis simulations of wireless devices using the NS2 simulator to improve the success rate of packet transmission and reduce delay time and packet loss rate.
- Instructor of "**Advanced Computer Networks**" and "***Cisco Packet** Tracer for **Network**" lab*s.

Shahid Beheshti University – *Undergraduate Assistant/Projects* May *2014-Jan 2015*

- Implemented a **web-based** information and communication system for "*computer engineering department of Shahid Beheshti University*", Using **ASP.Net With C# and SQL-server**. This Forum enables professors and students to interact with each other using services such as data sharing, discussion rooms, etc.
- Worked on development, debugging, testing of many projects including, implementation of Yahoo Messenger, Wikipedia, game apps, software design, database management systems, web application using **C++, C#.**
- Knowledgeable in **computer science fundamentals**: **data structures and algorithm design.**

Novin Medical Institute, Software Engineer *Intern* *June 2013*

- Collaborated on a **web-based** job-fitting app leveraging cognitive tests in **XML** and **C#.** The aim was to hire candidates based on their skills, experience, talent, characteristics, and performance.

EDUCATION

Wayne State University, MI
Doctor of Philosophy in **Computer Science** (GPA: **4 *I*4**) *Aug 2019-Dec 2023*

Shahid Beheshti University
Master of Science in **Computer Science** (GPA: **3.91**/4.00) Sep *2015-Jan 2018*

Shahid Beheshti University
Bachelor of Science in **Software Engineering**, (GPA: 3.3/4.00) Sep *2010-Jan 2015*

PUBLICATIONS

Niloofar Didar and Marco Brocanelli, "*Joint AI task allocation and virtual object quality manipulation for improved MAR app performance*", ICDCS 2024 *Accepted*

Niloofar Didar and Marco Brocanelli, "*Balancing Virtual Object Quality and AI Throughput in Mobile Augmented Reality Apps*", Mobisys 2024 *Under Review*

Sanaz Rabinia*, **Niloofar Didar***, Marco Brocanelli, Daniel Grosu, "*Algorithms for Data Sharing-Aware Task Allocation in Edge Computing Systems*", IEEE Trans. on Parallel and Distributed **Systems, ***Co-first author *Revised & Under Review*

Niloofar Didar and Marco Brocanelli, *"eAR: An Edge-Assisted and Energy-Efficient Augmented Reality Framework for Mobile Devices",* IEEE Transactions on Mobile Computing *Published*

Niloofar Didar and Maghsoud Abbaspour, "*IoT based integrated evacuation and rescue management system in response to fire incidents", EJ-ENG* *Published*

HONORS & AWARDS

- Collaborated on an NSF proposal through data collection, which was subsequently awarded by the NSF career program (~$576k, for 5 years). *Sep 2019-Jan 2024*
- Rumble Fellowship award from Wayne State University *Aug 2019- 2020*