Nikan Doosti

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Education

- **Iran University of Science and Technology (IUST)** — Tehran, Iran
  Master of Science in Computer Engineering - Artificial Intelligence — *Aug 2019 - Dec 2022*
  - **Thesis:** High Resolution Neural Topology Optimization via Differentiable Physics Engine
  - **Defense:** Achieved **maximum score** during defense on *Oct 22, 2022* with **GPA of 17.17/20.00**
  - **IUST:** This university is one of the most prestigious in the country, being in **top-4** consistently.
- **University of Guilan (UoG)** — Rasht, Iran
  Bachelor of Science in Computer Engineering — *Aug 2015 - Aug 2019*
  - **Final Project:** Descreening and Rescreening of Halftone Images via Data-Driven Deep Learning Methods
  - **Class Rank:** Graduated **3rd** out of 55 with a **GPA of 18.64/20.00**

Publications

- **Doosti, Nikan**, Julian Panetta, and Vahid Babaei. "Topology Optimization via Frequency Tuning of Neural Design Representations." In **Symposium on Computational Fabrication**, pp. 1-9. 2021. (ACM)

Talks

- "Neural Design Representations." **Toronto Geometry Colloquium Advised by Alec Jacobson** - University of Toronto. March 4, 2022. toronto-geometry-colloquium.github.io. (Length: 10 mins., Video)

Research Experience

Max Planck Institute for Informatics — Saarbrücken, Germany

- ***Research Assistant (remote)*** — *Jul 2020 - Mar 2021*
  Artificial Intelligence aided Design and Manufacturing Group
  - Project Overview: **Novel self-supervised neural method for obtaining the optimum design showcased in Topology Optimization**
  - Supervisors: Supervised by **Dr. Vahid Babaei** and collaborated with **Prof. Julian Panetta** from the University of California, Davis, USA.
  - **Interdisciplinary Work**: Successfully navigated and **mastered uncharted domains** beyond my primary field.
  - Experiment Management: Managed **large-scale experiments** by developing customized software solution to **track and report results**, particularly enabling **easy follow-up near deadline**.
  - Group Collaboration: **Shared AI expertise** with group members, focusing on PyTorch model implementation and **optimizing workflows with Slurm clusters**.
  - Manuscript Development: **Prepared all figures** and contributed approximately **65% to the manuscript**. Also, I oversaw all **administrative tasks** related to the paper's publication, including **handling revisions** and addressing **peer review feedback**.
  - Outcome: Resulted in a **master's thesis and a paper** that was published and presented at the ACM Symposium on Computational Fabrication 2021 (see Publications)

Work Experience

Self-Funded AI Venture — Tehran, Iran

- ***Founder and Engineer*** — *Mar 2024 - Jul 2024*
  Specializing in Automated Document Image Analysis
  - The problem: Many small to medium companies, especially in developing countries, **lack structured data pipelines, hindering efficient business operations** and inter-company interactions.

- Developed an automated document image analysis platform to **transform unstructured, denormalized documents into accessible, structured data.**
- Created a **no-code/low-code configuration system** for easy customization and business logic validation
- Integrated a **human-in-the-loop review process** for quality control and compliance
- Outcome and Insights: While the venture **did not achieve commercial success**, it provided valuable learnings:
  - Impact of **infrastructural inertia** toward data standardization
  - Complexities of **localization** of global tech solutions
  - Effects of **regulatory environments** on innovation
  - **Bureaucratic preferences** for transparency prevention in process management

Panafor Karaj, Iran

- ***Full-time Machine Learning Specialist*** *Apr 2022 - Jan 2024*
  Specializing in Data-driven Decision Making for Business Optimization
  - The Problem: Developed and implemented a **Data-driven AI solution** that optimized resource allocation by **prioritizing high-potential customer profiles**, significantly **reducing operational overhead and minimizing errors** in processing critical applications.
  - Impact: Decreased personnel error by 10%, **mitigating potential losses equivalent to 5.5 times my annual salary.** Also, **awarded for dedication and leadership**, leading to two promotions and a 70% salary increase within one year. Moreover, **I established myself as the primary resource for onboarding and training** new team members, receiving praise for my **ability to simplify fundamental concepts**.
  - Developed a **comprehensive screening process automation** from customer communication to profiles prioritization, filtering calls based on the complexity of inquiries, **reducing manual workload by 40%.**
  - Oversaw the development of a proprietary data extraction and preprocessing pipeline, resulting in a **35% reduction in poor-quality data**.
  - Deployed **classical machine learning** models alongside **deep learning** methods, coupled with **explainable AI** techniques to prioritize profiles and provide transparent reasoning for each decision.
  - Exhibited **proactive problem-solving** by **manually preparing years of "analog data" within the first 2.5 months**, a critical task which I prioritize over my role-specific duties to ensure project success.
  - **Managed a 15,000-line codebase**, ensuring maintainability and performance. **Designed 7 modules, with 3 adopted by other projects**, enhancing reusability and impact.

Teaching Experience

- **Head Teaching Assistant - Advanced Programming (AP)**
  Supervisor: Dr. Ghasem Mirroshandel - University of Guilan *Aug 2018 - Feb 2019*
- **Head Teaching Assistant - Algorithms Design (AD)**
  Supervisor: Dr. Mojtaba Shakeri - University of Guilan *Aug 2018 - Feb 2019*
- **Head Teaching Assistant - Computational Intelligence (CI)**
  Supervisor: Dr. Mojtaba Shakeri - University of Guilan *Feb 2018 - Jul 2018*

Taught Java in AP, designed and graded assignments, and **evaluated final projects**. Held **weekly Q&A sessions**, graded assignments, and **created programming tasks** for AD and CI courses.

Voluntary Activities

- **Mentor, Lecturer, and Organizer**
  Rasht School of AI, IUST Projects, and PyTorch Forum *2018 - 2022*
  - **Lecturing:** Delivered talks on AI applications, focusing on digital image processing (Slides)
  - **Mentorship:** Guided students in AI and M.Sc thesis processes, from ideation to publication
  - **Organizing:** Facilitated open discussions at IUST to promote collaboration and challenge the siloed culture
  - **Community Engagement:** Active in the PyTorch Forum, ranking 15th with 183 solutions and 566 posts (summary); praised for insightful contributions by Thomas Viehmann

Technical Skills

Deeply Involved:	Python, PyTorch, Tensorflow, Git, Windows, Linux/Debian, MLFlow, DVC, ExplainableAI, Sphinx Doc, "why you should care"
Have Experience With:	Docker, CI/CD, Slurm, PostgreSQL, FastAPI, Shell Scripting, HTML/CSS

Research Interests

- Deep Learning and Machine Learning
- Computer Graphics and Physics-based Simulation
- AI for Engineering and Science

Awards and Certificates

- Awarded for **dedication and leadership** at Panafor 2023
- Completed **training in Workplace Professionalism**, Organizational Behavior, etc. 2023
- Accepted in M.Sc program as a **National Exceptional Talent**, with **Tuition Waiver** at IUST 2019
- **Ranked 3rd** among B.Sc graduates in Computer Engineering, with **Tuition Waiver** at the UoG 2019
- Participated in the Deep Learning Summer School at Gdańsk University of Technology 2020

Referees

Dr. Vahid Babaei (Research Scientist) Saarbrücken, Germany
- *Role: Research project supervisor* *vbabaei@mpi-inf.mpg.de*
  Max Planck Institute for Informatics

Prof. Julian Panetta (Assistant Professor) Davis, USA
- *Role: Research project supervisor* *jpanetta@ucdavis.edu*
  University of California, Davis

Dr. Mojtaba Shakeri (Research Scientist) Los Angeles, USA
- *Role: Undergraduate mentor and instructor* *mojtaba.shakeri@gmail.com*
  MercuryGate (prev. Assistant Professor at University of Guilan, Rasht, Iran)