Nikan Doosti

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Education

- **Iran University of Science and Technology** — Tehran, Iran
  Master of Computer Engineering - Artificial Intelligence — *Aug 2019 - Dec 2022*
  - **Thesis:** High Resolution Neural Topology Optimization via Differentiable Physics Engine
  - **Defense:** Defended with Full mark on 22 Oct 2022
  - **GPA:** 17.17/20.00
- **University of Guilan** — Rasht, Iran
  Bachelor of Computer Engineering — *Aug 2015 - Aug 2019*
  - **Final Project:** Descreening and Rescreening of Halftone Images via Data-Driven Deep Learning Methods
  - **Class Rank:** 3 out of 55
  - **GPA:** 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

Research Assistant (remote) — Saarbrücken, Germany

- *Artificial Intelligence aided Design and Manufacturing Group* — *Jul 2020 - Mar 2021*
  Max Planck Institute for Informatics
  - Novel self-supevised neural method for obtaining the optimum design showcased in Topology Optimization
  - Under Supervision of **Dr. Vahid Babaei** and with Collaboration of **Prof. Julian Panetta** at University of California, Davis, USA.
  - Physics-based simulation of stiffness of the obtained design
  - Generative continuous design via a single fixed mesh through controlling the frequencies
  - This project which was defined as my master's thesis, has been published and presented in ACM Symposium on Computational Fabrication 2021
  - I spent 1500+ hours until the submission of concluding paper

Work Experience

Full-time Data Engineering and Data Science Specialist — Karaj, Iran

- *Specializing in Advanced AI Solutions for Business Optimization* — *April 2022 - December 2023*
  Nahal Gasht
  - The Problem: **Implemented an AI-driven solution to address the challenge of prioritizing customers applications in the tourism sector.**
  - 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 application 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 a machine learning model (XGBoost) coupled with Explainable AI techniques to prioritize applications and provide transparent reasoning for each decision.
  - This experience demonstrates my ability to leverage AI technologies to optimize decision-making processes, drive significant business outcomes, and collaborate effectively with stakeholders from various backgrounds.

Teaching Experience

- **Head Teaching Assistant - Advanced Programming**
  Supervisor: Dr. Ghasem Mirroshandel - University of Guilan *Aug 2018 - Feb 2019*
- **Head Teaching Assistant - Algorithms Design**
  Supervisor: Dr. Mojtaba Shakeri - University of Guilan *Aug 2018 - Feb 2019*
- **Head Teaching Assistant - Computational Intelligence**
  Supervisor: Dr. Mojtaba Shakeri - University of Guilan *Feb 2018 - July 2018*

As a teaching assistant, I **taught** Java in the Advanced Programming course, **designed and graded assignments**, and **evaluated the final project**. For the Algorithm Design and Computational Intelligence courses, I held **weekly Q&A sessions**, graded assignments, and **created pratical programming tasks** for Computational Intelligence.

Voluntary Activities

Mentor and Lecturer

- *An Open and Free Organization For Introducing AI and Mentorship* *2018 - 2021*
  Rasht School of AI
  - Held lectures around applications of AI, particularly digital image processing (Slides)
  - Mentored a few students who were interested in artificial intelligence and its applications

Organizer and Mentor

- *An Open and Free Organization For Sharing Ideas, Showcasing Projects, and Mentoring Students* *2019 - 2021*
  IUST Projects
  - Attempted to challenge the university's siloed culture through open scientific/general discussions
  - Mentored junior students in preparation for going through the M.Sc thesis process, from ideation to publishing

Member

- *Official forum with +50K members and authors of the PyTorch* *2018 - 2022*
  Official PyTorch Forum
  - A top member (15th) with 183 solutions and 566 posts (summary)
  - Commended by Thomas Viehmann for insightful posts

Research Interests

- Deep Learning and Machine Learning
- Computer Graphics and Physics-based Simulation
- Computational Fabrication
- Digital Image Processing
- Computational Health and Medicine

Awards

- Awarded for dedication and leadership at Nahal Gasht 2023
- Accepted in M.Sc program without Entrance Exam as an Exceptional Talent 2019
- Tuition Waiver, M.Sc, Iran University of Science and Technology 2019
- Ranked 3rd among B.Sc graduates in Computer Engineering at the University of Guilan 2019
- Tuition Waiver, B.Sc, University of Guilan 2015

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)