

# AMIRMOHAMMAD RAEI

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## Education

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### Technische Universität Darmstadt

*Master of Science in Artificial Intelligence and Machine Learning*

*Focus: Computer Vision, Deep Learning, Biometric Systems*

*Darmstadt, Germany*

*October 2024 – Present*

### Amirkabir University of Technology (Tehran Polytechnic)

*Bachelor of Science in Computer Engineering*

*GPA: 15.35/20*

*Thesis: Simorgh Cloud Platform*

*Tehran, Iran*

*September 2018 – September 2023*

## Research Interests

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Computer Vision, Biometric Systems, Signal Processing, Machine Learning, Data Mining

## Experience

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### Research Assistant

*Fraunhofer Institute for Computer Graphics Research IGD*

*July 2024 - Present*

*Darmstadt, Germany*

- *Smart Living & Biometric Technologies (SLBT) Department*
- Develop biometric authentication systems for security applications
- Design computer vision pipelines for biometric data processing
- Work with research teams on physiological signal processing
- Create technical documentation for biometric service standards
- Develop mobile health monitoring platforms

### Software Engineer

*Takhfifan*

*August 2022 - July 2023*

*Tehran, Iran*

- Developed new features for e-commerce platform VIP management system
- Fixed system issues and maintained platform stability
- Improved application performance and scalability
- Built full-stack solutions with modern web technologies

### Software Engineer & Data Scientist

*IRITCO*

*July 2020 - August 2022*

*Tehran, Iran*

- Developed and maintained software systems using Python, Django, and JavaScript
- Enhanced system performance and delivered new features
- Improved admin panels and support platforms
- Managed deployment processes and resolved server-side issues
- Optimized database operations for large datasets

## Research Projects

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### High Level Biometric Services (HLBS)

*Research Assistant, Fraunhofer IGD*

*July 2024 - February 2025*

*Darmstadt, Germany*

- Built comprehensive biometric authentication platform following German TR-03121 standards for government compliance
- Integrated facial recognition and professional fingerprint scanners (DERMALOG TouchLab SDK) with real-time processing
- Developed complete architecture using OpenCV 4.9 for computer vision and implemented secure SOAP web services
- Created multi-camera capture systems with enterprise-grade SSL/TLS security and logging
- **Technologies:** Node.js, React.js, Next.js, OpenCV 4.9, TypeScript, SOAP/WSDL, SSL/TLS, TouchLab SDK

### Mobile-S: Advanced Physiological Stress Detection Framework

Research Assistant, Fraunhofer IGD

July 2024 - Present  
Darmstadt, Germany

- Created advanced mobile health platform detecting stress in real-time using heart rate variability and statistical analysis
- Built custom firmware for BLE sensors (nRF52840) and developed Android apps integrated with Garmin Health SDK
- Deployed secure FastAPI backend with Nginx processing physiological signals using advanced filtering techniques
- Computed stress indicators through z-score methods and included machine learning models for terrain classification
- **Technologies:** Android SDK, Kotlin, Python, FastAPI, TensorFlow, nRF52840 BLE, Garmin Health SDK, PPG Signal Processing

### Bachelor Thesis: Simorgh Cloud Platform

Amirkabir University of Technology

2023  
Tehran, Iran

- Developed full-featured cloud e-commerce platform with content management capabilities
- Handled complete business operations including customer accounts, product catalogs, order processing, and dynamic discount systems
- Integrated secure payment systems and built blog management tools with comprehensive admin dashboards
- Demonstrated scalable software architecture and modern web development practices
- **Technologies:** Django, Python, PostgreSQL, Django REST Framework, CKEditor, Bootstrap, JWT Authentication

### Teaching Experience

#### Teaching Assistant - Web Programming

Amirkabir University of Technology

Two Semesters (Feb-Jul 2022, Sep 2022-Jan 2023)

Tehran, Iran

- *Instructor: Parham Alvani*
- Designed homework assignments for undergraduate students
- Answered student questions and provided guidance
- Evaluated and graded student assignments
- Conducted lab sessions for web development courses

### Technical Skills

#### Programming Languages

Python, JavaScript, TypeScript, Java, C/C++, Kotlin

#### Machine Learning & AI

PyTorch, TensorFlow, OpenCV, Scikit-learn

#### Web & Backend

React.js, Node.js, Django, FastAPI

#### Tools & Platforms

Git, Linux, Docker, Android SDK

### *Language Proficiencies*

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<b>Persian</b>	Native
<b>English</b>	IELTS: 7.0 (R: 7.5, L: 7.5, S: 7, W: 6)
<b>German</b>	Intermediate (B1)

### *Honors and Awards*

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<b>University Entrance Exam</b>	Achieved top 1% place among more than 140,000 applicants of the Nationwide Mathematics University Entrance Exam 2018
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