

Nikoo Khanahmadi, M.Sc.

Biomedical Engineer | Ph.D. Applicant in Neuroengineering & Biomedical AI
Isfahan, Iran

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Professional Summary

Biomedical engineering graduate with strong research experience in neurofeedback, EEG signal analysis, and machine learning-based prediction models. Published researcher with a growing portfolio in neurotechnology and explainable AI. Holder of multiple domestic and international patents in medical and neurorehabilitation devices. Seeking a Ph.D. opportunity to explore computational neuroengineering, brain-computer interfaces, and clinical AI applications.

Education

M.Sc. Biomedical Engineering – Islamic Azad University, Najaf Abad, Isfahan, Iran

GPA: 3.9 / 4.0 | 2019 – 2023

Thesis: *Predicting the Success of Neurofeedback Training for Patients with ADHD*

- Applied EEG signal processing and machine learning models to assess treatment responsiveness. - Developed statistical and ML pipelines for identifying predictive neural markers.

B.Sc. Biomedical Engineering – Islamic Azad University, Khomeini Shahr, Isfahan, Iran

GPA: 3.63 / 4.0 | Feb 2014 – Sep 2017

Thesis: *Building an Intelligent Orthopedic Screwdriver*

- Designed and prototyped a sensor-embedded orthopedic tool for surgical feedback and precision.

Research Experience

Graduate Researcher – Department of Biomedical Engineering, IAU Najaf Abad

2019 – 2023

- Conducted neurofeedback experiments in ADHD using EEG phase-locking value and machine learning. - Developed predictive frameworks to optimize patient selection for neurotherapy. - Collaborated on experimental design, signal processing, and model evaluation. - Contributed to multiple peer-reviewed publications.

Technical Skills

Programming & Analysis: Python, MATLAB, SPSS, Origin

Signal Processing: EEG preprocessing, Phase Locking Value, Neurofeedback

AI/ML Tools: Scikit-learn, Explainable AI (XAI), SVM, Decision Trees

Prototyping: Sensor integration, embedded systems, device testing

Documentation & Reporting: Scientific writing, patent drafting, regulatory documentation

Publications

1. **N. Khanahmadi, M.R. Yousefi**, "Prediction of success in neurofeedback treatment for attention-deficit hyperactivity disorder before starting treatment", Journal of Intelligent Procedures in Electrical Technology, vol. 16, no. 63, pp. 39-60, December 2025 (in Persian).
https://jipet.iaun.iau.ir/article_701387.html
 2. **M. R. Yousefi, N. Khanahmadi, A. Dehghani**, "Utilizing Phase Locking Value to Determine Neurofeedback Treatment Responsiveness in Attention Deficit Hyperactivity Disorder". J. Integr. Neurosci. 2024, 23(6), 121.
<https://doi.org/10.31083/j.jin2306121>
 3. **Khanahmadi, N.** (2025). Explainable Artificial Intelligence in Neuroengineering: Designing Transparent and Trustworthy Deep Learning Models for Clinical Applications. Submitted to BioMedical Engineering Online – Under Review.
 4. **Khanahmadi, N.** (2025). Toward Transparent and Personalized Diagnosis in Neuroscience: A Comprehensive Review of Multimodal AI Applications in Brain Disease Detection. Submitted to BioMedical Engineering Online – Under Review.
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Patent Portfolio

Domestic Patents (Iran):

- Khanahmadi N. (2018). Iranian Patent, No 96033, Tehran, "Electronic opposite bathroom device in physiotherapy."

(<http://ipm.ssaa.ir/Search Result?page=1&DecNo=139650140003007941&RN=96033>)

- Khanahmadi N. (2019), Iranian Patent, No 98892, Tehran, "Electronic device for the treatment of eye aberration in ophthalmology."

(<https://ipm.ssaa.ir/Search-Result?page=1&DecNo=139750140003002851&RN=98892>)

- Khanahmadi N, (2020), Iranian Patent, No 101985, Tehran. “ Electronic device for heating medical gels, pump with the ability to wash the probe.”

(<https://ipm.ssaa.ir/Search-Result?page=1&DecNo=139750140003007566&RN=101985>

International Patents (WIPO):

- Khanahmadi N, (2020), Publication Number: WO/2021/152352 “Intelligent Electromechanical Device for The Treatment of Ocular Double Vision and Eye Deflection using the Pencil Push Up Method”
(<https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2021152352&docAn=IB2020050788>)
- Khanahmadi N, (2020), Application Number: WO/2021/214522A1 “Smart Vacuum Electronic Splint with The Ability to Coagulate and Control Blood Supply”
(https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2021214522&_cid=P12-M1XA4E-223921)
- Khanahmadi N, (2020), Publication: WO/2021/165718 “ELECTRONIC SAFETY BELT AT HIGH ALTITUDES TO PREVENT INJURY AND SHOCK”

<https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2021165718>

Ph.D. Research Interests

- Brain-computer interfaces and neurofeedback systems
- EEG-based biomarkers and cognitive signal modeling
- Explainable artificial intelligence (XAI) in clinical prediction
- Embedded systems and neurotechnology device innovation
- Human-machine interaction in rehabilitation engineering

Languages

- English (Advanced (TOEFL iBT 92))
- Persian (Native)

JOB EXPERIENCE

- **FEB 2023 - MAY 2024**
Technical supervisor of medical equipment production, Fanavaran
Teb Asia Company

- **FEB 2022 - FEB 2023**

Technical supervisor of medical equipment production, Faraz Mehr Industrial production company, Isfahan

- **JAN 2021- JAN 2022**

Technical supervisor of medical equipment production, Sima Sazan Abtin company

- **NOV 2019 - NOV 2020**

Technical supervisor of medical equipment production, Komil Kashan Health services company

- **JUNE 2015 - 2019**

Biomedical engineer, Green Health Apple Co., Ltd.

Wrote the technical file of medical products, performed the Consulting and implementation of: iso 13485, iso 9001, performed Imed registrations, applied to register the patent, and helped to Register the brand.

ACTIVITIES

- Technical Officer of the Food and Drug Administration
 - Member of the International Federation of Inventions and Inventors' Associations (IFIA)
 - Technical supervisor of production, import, and distribution of medical equipment
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References

1. Dr. Mohammadreza Yousefi Najafabadi,

Assistant Professor (Senior Member of IEEE), Manager of

Microgrid Research Center, Counselor of IEEE IAUN Student Branch, Electrical Engineering, Islamic Azad University, Najafabad Branch, Isfahan, Iran

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2. Dr. Hamid Mahmoodian

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