Hossein Bodaghi

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Google Scholar: https://scholar.google.com/citations?user=X5rIVagAAAAJ&hl=en&oi=ao
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RESEARCH INTERESTS

Machine Learning	Deep Learning	Computer Vision
Interdisciplinary Research	3D Reconstruction	Human-Computer Interaction

EDUCATIONS

- **University of Tehran** — Tehran, Iran
  Master of Science - Control Engineering - GPA: 3.2/4 OR 15.38/20 — Sep 2018 - Feb 2022

  Thesis title: "Identification Based on Human Body by Neural Network and Geometric Separation Index"
  Thesis Score: **Excellent**

  Courses: Neural Networks, Pattern Recognition, Deep Learning, System Identification, Statistical Inference, Robotics, Nonlinear Control, Optimal Control

- **Imam Khomeini International University** — Qazvin, Iran
  Bachelor of Science - Electrical Engineering (Control) - GPA: 13.71/20 — Sep 2013 - Sep 2018

PUBLICATIONS

- **CA-Market: A Partially Categorical Annotating Approach Based on Market1501 Dataset for Attribute Detection** — 2021
  7th International Conference on Signal Processing and Intelligent Systems (ICSPIS), IEEE.
- **K-Splits: Improved K-Means Clustering Algorithm to Automatically Detect the Number of Clusters** — 2022
  In Computer Networks, Big Data and IoT, pp. 197-213. Springer, Singapore.
- **Single-Item Fashion Recommender: Towards Cross-Domain Recommendations.** — 2022
  30th International Conference on Electrical Engineering (ICEE), pp. 12-16. IEEE.
- **Image-based and Partially Categorical Annotating Approach for Pedestrian Attribute Recognition** — Submitted
  Journal of Visual Communication and Image Representation

RESEARCH EXPERIENCE

- **Research Assistant at the University of Tehran** — Tehran, Iran
  Human & Robot Interaction Laboratory (TaarLab) — Aug 2019 - Feb 2023
  - **Person Re-identification and Attribute Recognition**
    - **Developed Innovative Datasets:** Introduced the CA-Market and CA-Duke datasets.
    - **Enhanced Attribute Detection:** Improved classification accuracy to over 92% with the CA-Market dataset.
    - **Innovative Metric Development:** Proposed the Separation Index (SI) metric to evaluate data separability in the latent space.
  - **Fashion Recommender System**
    - **Advanced Clustering Algorithm:** Designed k-splits to enhance k-means, achieving automatic cluster determination with high accuracy and speed.
    - **Enhanced Fashion Recommender:** Introduced a random background-changing augmentation to robust and generalize the neural network's outputs.

TEST SCORE

- **TOEFL:** 95 (Reading 26, Listening 27, Speaking 21, Writing 21)

WORK EXPERIENCES

- **AI Developer** Tehran, Iran
  Avatia Aug 2023 - Present
  - **Photo-Realistic & Morphable 3D Avatars**
    - **Developed AI Pipeline:** Created and optimized an AI pipeline using generative AI and CNNs. reducing generation time from 1 minute to less than 5 seconds.
    - **Enhanced 3D Customization:** Built software to modify avatar assets (hair, clothes, shoes) using Blender in Python.
    - **Deployed Production-Ready API:** Developed and deployed a RESTful API with FastAPI, making the 3D avatar generation and customization tool.
- **Co-founder & AI Developer** Tehran, Iran
  ModYab Feb 2021 - Mar 2022
  - **Fashion Image-based Search Engine**
    - **Developed Novel AI-Based Fashion Recommender:** Designed and implemented a fashion image recommendation system, including data collection, cleaning, and model training.
    - **Enhanced System Performance:** Continuously fine-tuned and improved the recommender system for accuracy and industrial-scale deployment.

HONOR AND PATENT

- **Search engine and recommender system for apparel and fashion via deep learning**
  Iran Patent Application No. 139950140003006672. 2021
- Ranked 50th among more than 20 000 participants at the University National Entrance Exam (Konkur).

SKILLS

- **Programming Languages:** Python, Matlab, C++
- **Python General Libraries:** Numpy, Sklearn, Pandas, Requests, FastAPI, Matplotlib, Argpars
- **Deep Learning Stack:** Pytorch, TensorFlow, Keras, Torchvision
- **Computer Vision:** Object Detection, Optical Flow, Kalman Filter, Data Augmentation
- **3D Vision:** Geometry, MVS, Depth Estimation, Blender, Pytorch3d
- **Others:** Git, LaTeX, HTML, CSS, Docker, SQL, MongoDB
- **Soft Skills:** Problem-Solving, Teamwork, Adaptability, Independence

INTEREST & HOBBIES

Football tennis, Foosball, Swimming, Walking, Biking, Badminton
Barbecue, Hiking, Camping, Friend gathering
Podcast, Movies, and Series

REFRENCES

- Mehdi Tale Masouleh, Associate Professor at the University of Tehran, School of ECE
  m.t.masouleh@ut.ac.ir
- Ahmad Kalhor, Associate Professor at the University of Tehran, School of ECE
  akalhor@ut.ac.ir