Babak Abad
Artificial Intelligence and Robotics

Experienced artificial intelligence and robotics engineer with 9 years of experience in software development. Designing machine vision systems from selecting image acquisition and lighting instruments to developing deep-learning based models. Proven ability to take complex AI problems and break them down into manageable parts, leading to rapid prototyping, maintainable and replaceable, software modules.

Babak.Abad@yahoo.com
(+98)9363110133
Iran – Rasht
www.ai-programmer.com
https://www.linkedin.com/in/babak-abad
https://stackoverflow.com/users/2672788/babak-abad

Skills

Deep Learning	Machine Vision	Object Detection	Object Tracking	Segmentation	
Software Engineering	Keras	OpenCV	C++	Python	C#

Work Experiences

Machine Learning/Software Engineer

Tajeran Jadeh Abrisham – Tehran/Iran

08/2017 – Present

- **CNN OCR:** improving speed of a CRNN OCR deep learning model by 22 times without accuracy drop using RNN layer elimination and Bayesian process optimizer.
- **Deep-learning based license plate detector:** developing a Yolo-based license plate detector runs 57FPS on 9900K CPU.
- **CRNN OCR:** developing a hybrid OCR deep-learning model (RNN + CNN) reading characters of license plates in harsh conditions such as uneven illuminations, shadowing, heavy dust, elastic distortion, scratched or occulated characters.
- **Multi-kernel edge-based license plate detector:** using multiple kernels, multiple morphological structuring elements and optimizing their hyper-parameters using Bayesian process optimizer. CNN classifier is also used to confirmation leads to reduce false positive detection.
- **Camera synchronizer:** developing an AVR-based board to synch multiple cameras, and flash lights lead to significant lower heat generation and power consumption.
- **Device evaluation:** evaluating and formulating hardware requirements including computers, networking devices, cameras, flash lights, etc. using traffic characteristics.
- **Database synchronizer:** synchronizing a local database without replication to reduce complexity of database installation and setup.

Machine Learning/Software Engineer

Dadeh Kavan Khazar Pouya

07/2016 – 08/2017

- **License plate detector:** developing an edge and morphological based detector working at 5FPS on core-i7 2670 QM mobile processor.
- **ITS labeler:** developing a utility to label cars, license plates, models, speed, locations, camera models, lens model for any captured photo.

Software Engineer
AveedCo
05/2013 – 05/2014
- **RFID-based customer identification and tracking:** tracking customers using active UHF-RFID detecting entrance of people/vehicles. Navigating shop assistance to location of VIP customers.

Teacher
Hadaf educational institute
06/2011 – 09/2012
- **Training basics of programming:** teaching conceptual model of computers, algorithms, flow chart, pseudo code, and simple electronic circuits.
- **Training basics of Robotics:** introducing binary logics, sensors, flip flop circuits, and PCB development.
- **System administrator:** Network maintenance, software repair and upgrades.

Education
Master of Science
Islamic Azad University - Lahijan branch / Lahijan
09/2017 – 09/2019
Thesis: *Increasing Detection Rate of Europe Standardized Iranian License Plates using Canny Edge Detection*

Bachelor of Science
University of Guilan / Rasht
08/2008 – 06/2013
Project: *License Plate Recognition using Digital Image Processing Techniques*

Publications
- B. A. Fomani and A. Shahbahrami, "*License plate detection using adaptive morphological closing and local adaptive thresholding*," 2017 3rd International Conference on Pattern Recognition and Image Analysis (IPRIA), Shahrekord, 2017, pp. 146-150, doi: 10.1109/PRIA.2017.7983035.
- Shahbahrami, B. A. Foomani and A. Akoushideh, "*A style-free and high speed algorithm for License Plate Detection*," 2017 10th Iranian Conference on Machine Vision and Image Processing (MVIP), Isfahan, Iran, 2017, pp. 76-81, doi: 10.1109/IranianMVIP.2017.8342372.
- T. Najafi, B. A. Foomani and A.Shahbahrami, "*Anxiety and Depression Detection using Statistical Features*," 2017 2nd National Conference on Soft Computing, Roudsar, Guilan, 2017.
- Pourkashani, A. Shahbahrami and B. A. Fomani, "*Copy Move Forgery Detection Using Histogram Quantization of Cross Power Spectrum*," 2017 International Conference on High Performance Computing & Simulation (HPCS), Genoa, 2017, pp. 826-831, doi: 10.1109/HPCS.2017.125.
- B. A. Foomani, A. Shahbahrami and M. Ahmadi, "*Iranian Private Vehicle License Plate Detection using Image Processing Technics*," 2013 8th Iranian Conference on Machine Vision and Image Processing (ICMVIP08), Iran, Zanjan, 2013.

Soft Skills
Attention to Details	Learning from Others	Experimentation	Cooperation	Innovation
Confidence	Writing	Patient		

Interests
Bio Signals	Medical Imaging	FPGA	Physics	Quantum Computing
Playing Piano	Repairing Cars	Car Technologies	Video Games	