Amr Aboughazala

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LinkedIn Xing Portfolio Site

Objective

Bringing deep experience in R&D and algorithm development, I aim to contribute to impactful work in signal processing, machine learning, perception, and computer vision within a research-focused environment.

Key R&D Contributions

Sep. 21 Present — **Senior Algorithm and Data Processing Developer,** Scantinel Photonics GmbH, Ulm Germany

- Led development and testing of the novel algorithm "VQRV" for Doppler ambiguity in FMCW LiDAR systems.
- Proposed and implemented an internal perception pipeline (filtering, segmentation, object detection, tracking).
  Sources: Ransac, knn, kd-tree, JPDA Tracking..
- Designed the Dense Cluster Filter "DCL" and the Multilevel Neighboring Filter "MLN", improving performance from 450 ms to "30 ms" per frame.
- Created a new confusion matrix and evaluation scheme to evaluate raw time-domain and frequency-domain signal analysis.

Jan. 19 Jul. 21 — **Automated Image Analysis for Segmenting Bacteria,** Navimatix GmbH, Jena Germany

- A full pipeline image processing algorithms for bacteria counting on Fluorescence Images.
  Sources: Median Filter, ISODATA Segmentation, Opening Filter, 2D & 3D counting.

Jul. 18 Nov. 18 — **Kalman Filter on Satellite Reception,** Start Up OBDient, TU Ilmenau

- Implemented Kalman Filter GPS reception using a motion model of vehicles and pedestrians.

Mar. 17 Feb. 18 — **Positivity Decomposition Algorithms on EEG/MEG Data,** Master Thesis, MSCSP Group, TU Ilmenau

- Implemented non-negativity constraints on tensor-based blind source separation algorithm
  Sources: Publication, Thesis Publication (not completed)

Sep. 16 Feb. 17 — **Technical Applications for time sensitive data AVB and TSN,** Work Student, Siemens, Network R&D, Munich Germany

- Implemented a simulation of TSN Scheduler as well as converter from SDN controller using C++.
  Sources: C++, Omnet++, Time Sensitive Network for Industry v.4.

Sep. 16 Feb. 17 — **Decomposition of a Low Rank Tensor with Missing Entries,** Advanced Research Project, MSCSP Group, TU Ilmenau

- Developed a missing imputation tensor algorithm to make it adaptive as per step size and rank estimation.
  Sources: document.

Mar. 15 Jul. 15 — **Dynamic Speed Limit Scheme Using VANET Communication,** Basic Research Project, TU Ilmenau

- Developed a scenario using Wireless Sensor Networks and VANETs.
  Sources: C++, Omnet++.

Technical Skills

Languages

Python
C++
Java
C#
Matlab

Libraries

DATA: numpy, pandas, scipy
PLOT: matplotlib, plotly, pyqt-graph
ML: pytorch, scikit-learn, spconv
CV: opencv

VC: git, gitlab
GUI: PyQt, JavaFX, WPF
OOP: MVC, MVVM
LIDAR: open3D, open3DML, pytorch3d

Technical Fields

Signal Processing
Optimization–Mathematics
Machine Learning
Wireless Communication
Audio & Image Processing
Communication Networks

Industry Experience

Senior Algorithm and Data Processing Developer Scantinel Photonics GmbH, Ulm Germany
Sept. 2021 – Present

- Led the architecture of new system software, collaborating with embedded teams to align hardware/software interfaces. skills: Pattern design MVC/MVVM
- Developed and maintained real-time and offline visualization GUIs supporting continuous feature development and release cycles for internal users and customers over two years. skills: python, PyQt
- Built an offline testing platform for prototyping and analyzing signal processing pipelines.
- implementing testing development creating unit, integration and functional testing. skills: pytest

Software Developer Navimatix GmbH, Jena Germany
Jan. 2019 – Jul. 2021

- Developed a GUI applying image processing algorithm on Microscopic Images to count bacteria.
- Implemented several user interface applications.
- Skills: JavaFX, .Net Framework WPF and Delphi.

Sensors Expert and Data Analyst Start Up OBDient, TU Ilmenau
Jul. 2018 – Jul. 2018

- Implemented data sensor fusion using GPS and Accelerometer on Raspberry Pi. Tools: NMEA Data of a NEO-6M GPS, MPU6050 GyroSensor, Raspberry Pi 3 B+

Customer Technical Network Specialist Orange Business Services, Cairo Egypt
Jul. 2011 – Aug. 2014

- Diagnose WAN network fault-related cases both proactive and reactive being responsible of the faults to resolution.
- Shift Leader for a group of 5 to 10 daily, managing the workflow through the team.

Education

M.Sc. in Communications and Signal Processing
Technische Universität Ilmenau, Germany
Sep 2014 – Feb 2018
Major: Mobile Communications, Adaptive Arrays, DSP
Grade: 2.2/1.0

B.Sc. in Electronics and Communication
Arab Academy for Science and Technology, Alexandria
Sep 2007 – Feb 2010
Grade: 1.3/1.0 — Top of class

Certificates and Online Courses

- 22 May 2019: OOP in Java — Udemy
- 24 Aug. 2020: Machine Learning — Coursera
- 14 May 2021: Structuring ML Projects — Coursera
- 30 Apr. 2021: Neural Networks and Deep Learning — Coursera
- 04 Jun. 2021: Convolutional Neural Networks — Coursera
- 07 May 2021: Improving DNN Hyperparameter Tuning, Regularization and Optimization — Coursera
- 24 Aug. 2021: Sensor Fusion — Udacity (Mercedes Benz)

Personal Skills

Languages

Arabic: Native
English: Fluent
German: B1 TELC

Hören	● ● ○ ○ ○ ○
Lesen	● ● ○ ○ ○ ○
Schreiben	● ● ○ ○ ○ ○
Sprechen	● ● ○ ○ ○ ○

Interests

Graphics Design
Tennis
Movies and TV Series
Trying Different Restaurants