Amr
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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
Lidar Doppler Ambiguity, Scantinel Photonics GmbH, Ulm Germany

- Responsible of R&D, implementation, testing and enhancing of a novel algorithm for Doppler ambiguity in FMCW LiDAR systems.
  Sources: VQRV, VTRV, VQR

Sep. 21
Sep. 22
Perception, Scantinel Photonics GmbH, Ulm Germany

- Proposed and implemented an internal perception pipeline (filtering, segmentation, object detection, tracking).
  Sources: Ransac, knn, kd-tree, JPDA Tracking.
- Designed novel filters improving performance from 450 ms to 30 ms
  Sources: Dense Cluster Filter "DCL" and the Multilevel Neighboring Filter "MLN"

Jun. 23
Oct. 23
Time–Frequency Signal Analysis and Comparative Evaluation of Detection Methods, Scantinel Photonics GmbH, Ulm Germany

- Implemented and applied classical windowing and detection methods on raw signal data to evaluate detection reliability, supported by statistical analysis.
  Sources: Windows (Hann, Chebyshev, Planck-Taper), Peak Detection: (CA-CFAR, OS-CFAR, RANSAC, M-estimator)
- Simulated a dual-signal FFT technique real/imaginary packing to enable simultaneous processing.

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

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
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

Technical Skills

Languages

Matlab	●●●●●●
Python	●●●●●●
C++	●●●○○○
Java	●●●○○○
C#	●●●○○○

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

Libraries

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

Industry Experience

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

- 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
- Developed a user-facing GUI integrating multiple signal processing algorithms and visualization tools, enabling interactive analysis and testing across devices with real-time performance evaluation.
- implementing testing development creating unit, integration and functional testing.
  Skills: pytest

Jan. 19
Jul. 21
Software Developer, Navimatix GmbH, Jena Germany

- 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.

Jul. 18
Nov. 18
Founding Engineer, Start Up OBDient, TU Ilmenau

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

Sep. 16
Feb. 17
Working 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.

Jul. 11
Aug. 14
Customer Technical Network Specialist, Orange Business Services, Cairo Egypt

- 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