



Amr Abughazala

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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

Coding

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

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

Libraries

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



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.



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



Sep. 14
Feb. 18

M.Sc. in Communications and Signal Processing, Technische Universität Ilmenau, Germany

- Major Subjects: Mobile Communications Engineering, Adaptive Array and Signal Processing, Digital Signal Processing (audio and Image) and Communication Networks.
- Average grade: 2.2/1.0



Sep. 05
Feb. 10

B.Sc. in Electronics and Communication, Arab Academy for Science and Technology, Alexandria

- Major Subjects: Wireless and Mobile Communications, Analog and Digital Signal Processing, Communication Networks, Electro-magnetic and Antenna theories.
- Average grade: 1.3/1.0 – Excellent with degree of honor besides graduating top of my 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