Fares Abawi (PhD Candidate)

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 Fares Abawi

PERSONAL INFORMATION

PyTorch | Keras | ROS | MuJoCo | Docker | NumPy | pandas | sklearn

Nationality & Residence	**Bahrain** (permanent resident in **Germany**)
Languages	**English** (native proficiency), **Arabic** (native proficiency), **German** (intermediate proficiency)

EDUCATION

University of Hamburg, DE July 2020 - Now	**Ph.D. Computer Science** My research is focused on predicting social attention in dynamic settings & understanding the influence of robot gaze & social cues on humans. I explore different neural techniques to integrate non-verbal social cues through late & early fusion
University of Hamburg, DE October 2016 - April 2019	**M.Sc. Intelligent Adaptive Systems (Computer Science)** Courses: Human-Computer Interaction, Neural Networks, Bio-inspired AI, Machine Learning & Speech Signals
German Jordanian University, JO September 2011 - August 2016	**B.Sc. Communication Engineering** Courses: Analog/Digital Electronics, Electromagnetics, Signal Processing, Networks, Embedded Sytems & OOP
Darmstadt Univ. of Appl. Sc., DE March 2015 - February 2016	**B.Eng. Electrical Engineering and Information Technology - Exchange Student** 1-year scholarship from the German Academic Exchange Service (DAAD) for achieving the highest academic merits

PROFESSIONAL EXPERIENCE

University of Hamburg, DE April 2020 - Now	**Research Associate @ Knowledge Technology Group** Developed neural attention models for multimodal scanpath & saliency prediction, implemented on robots: ● Simulated & physical robot actuation (iCub & Pepper) using YARP & ROS ● Audiovisual multimodal integration for modeling social attention using PyTorch ● Cognitive simulation for emulating human-like crossmodal (audiovisual) conflict on a robot
Smartmicro GmbH, DE May 2019 - April 2020	**Algorithm Engineer @ Tracking and Sensor Fusion Group** Developed neural models for traffic and automotive radar signal processing: ● ROS multi-camera + radar calibration & fusion for multi-object tracking ● Sequential radar signal classification & trajectory estimation using PyTorch & sklearn ● CD & MLOps pipelines with Jenkins & Docker
University of Hamburg, DE December 2017 - March 2019	**Research Assistant @ Knowledge Technology Group** Developed visuomotor grasping models & language models: ● Robotic simulation for object grasping using MuJoCo ● Computer vision for object detection & grasping using Keras ● Language modeling with surprisal-based activation using Keras & Tensorflow
Harman International, DE September 2015 - February 2016	**Internship: Speech Interaction Systems @ Spoken Dialog System Group** Developed application concepts for a spoken dialog system: ● Grammar parsing tools in Java, XML & XSLT ● Speech engine integration (Ivona text-to-speech & Nuance speech recognizer) in C++
German Jordanian University, JO July 2014 - September 2014	**Internship: Scheduling Automation @ Information Systems and Technology Center** Developed a graph coloring optimization-based exam scheduling system using AMPL

PROJECTS

University of Hamburg, DE October 2018 - April 2019	**M.Sc. Thesis: Intermediate Representations in Deep Multimodal Neural Networks** (Grade: 1.0) Developed a multimodal/multitask neural network for goal-oriented grasping: ● Data processing and filtration using NumPy & pandas. 3D augmentation (AR) in real scenes using OpenGL ● Developing object grasping models with images & linguistic description as input built with Keras ● Robot simulation & inverse kinematics using MuJoCo
University of Hamburg, DE October 2017 - April 2018	**M.Sc. Project: Designing a Personality-Driven Robot for an HRI Scenario** (Grade: 1.0) Developed the spoken dialogue system for a robotic interaction experiment: ● Designing a frame-based dialog system with mixed-initiative ● Speech & language engine integration (SpaCy, MITIE, Amazon Polly & Google Speech) ● Speech signal processing & language modeling
German Jordanian University, JO February 2014 - February 2015	**B.Sc. Thesis: Alerting Sounds Detection, Classification, and Localization for Assisting People with Hearing Disabilities** (Grade: 98%) Developed an alert-sound classification (support vector machines) & localization system (TDOA): ● Construction of a hardware prototype with microphone arrays ● C#, C & Matlab development of localization prototypes ● Code development on Windows Phone, BeagleBone & Arduino ● Speech signal processing & feature engineering
Open Source	**Wrapyfi:** Python wrapper for multi-middleware support including ROS/2, YARP & ZMQ with deep learning plugins **Llama + Wrapyfi:** Distributing the Llama LLM on multiple machines using Wrapyfi **ImageBind LoRA:** Fine-tuning a crossmodal embedding model using Low-Rank adaptation

SELECTED PUBLICATIONS

Full list on https://orcid.org/0000-0002-4240-5351

[1] **F. Abawi**, P. Allgeuer, D. Fu, and S. Wermter. "Wrapyfi: A Python Wrapper for Integrating Robots, Sensors, and Applications across Multiple Middleware," to appear in Proceedings of *The ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, 2024.

Related code: https://github.com/fabawi/wrapyfi

[2] **F. Abawi**, T. Weber, and S. Wermter. "GASP: Gated Attention for Saliency Prediction," in Proceedings of *The International Joint Conference of Artificial Intelligence (IJCAI)*, 2021.

Related code: https://github.com/knowledgetechnologyuhh/gasp

[3] M. Mohammadi, N. Xirakia, **F. Abawi**, and others. "Designing a personality-driven robot for a human-robot interaction scenario," in Proceedings of The *IEEE International Conference on Robotics and Automation (ICRA)*, 2019.

[4] T. Alpay, **F. Abawi**, and S. Wermter. "Preserving activations in recurrent neural networks based on surprisal," Neurocomputing, 2018.