Tarek Dief

AIRPLANE DEVELOPMENT ENGINEER, PDAS LTD.COMPANY, JAPAN • CONTROL EXPERT

Male • July 6, 1990 • Edmonton, Canada

(+1) 587-921-3179 | na3emtarek@gmail.com | www.pdas.co.jp , https://www.ncbl.ualberta.ca/tarek-dief | Tarek Dief

Summary

- Specialized in system modelling, and simulation.
- Skilled in system analysis, control design, algorithm implementation, and testing.
- Well-trained engineer in system troubleshooting, hardware setup, and software systems.
- Leading author for 18 journal/conference papers (see LinkedIn profile for detailed list of publications)

Work Experience

University of Alberta, Nanotechnology Research Centre — *Edmonton, Canada*

Postdoctoral Fellow **(FULL TIME):** REMOTE HEALTH MONITORING AND REHABILITATION OF PATIENTS WITH NEUROLOGICAL CONDITIONS TO MINIMIZE THE RISK OF COVID-19 SPREAD IN CANADIAN HOSPITALS — *August 2020- present*

- Develop algorithms to 1) identify different components of daily activity (e.g., lying, sitting, standing, walking, running, stair climbing/descending) of those with MS injuries in the community, 2) characterize sitting and standing balance of MS patients.
- Develop a feedback-based technology to recommend patients to behaviour change to minimize the MS-related symptom when detected.
- Implement the developed technology in the real world to investigate the validity and suitability of the developed wearable technology.
- Fine-tune and finalize the first prototype of the developed technology as a user-friendly technology that can be adopted by the patients and healthcare provider with minimal training.

PD Aerospace company, LTD, Japan — *Aichi, Japan*

Airplane development engineer **(FULL-TIME)** — *March 2020- Aug. 2020,* ***present*** ***(On-leave)***

- Design and develop algorithms required for airplane-X06 control system
- Integrate, validate and test X06 software and electronic components.
- Design, support and conduct X06 flight tests.

Kyushu University, RIAM — *Fukuoka, Japan*

Postdoctoral Fellow **(FULL TIME)** — *Oct 2017- March 2020*

- Design and built the kite control unit (KCU) for stabilizing the kite during flight.
- Model and simulate model for variable-tether-length system.
- Build a measurement unit and wireless communication system to measure the kite's position and attitude then send these data to the ground station.

Skills

Languages	Python, C++, MatLab/Simulink
Platforms, Framework	2-D AutoCAD, SolidWorks (3D Modelling), LabVIEW.
Operating Systems	Linux, Windows.
Photo and Video Editing:	Photoshop

Projects

Kite Power System An Airborne Wind Energy System (AWEs) utilizing the wind to generate power using kites. It consists of inflatable kite that flies in Figure-of-Eight motion with control algorithm to harvest the optimal power from the lifting force comes from the kite. I succeeded to simulate the governing equations, and control algorithm then validate the results with different mathematical models for the kite. Moreover, I built a ground station for the kite system and do several tests to control the kite using the Kite Control Unit (KCU).

SKYPULL Power System An Airborne Wind Energy System (AWEs) utilizing the wind to generate power using fixed wing drones. It consists of a rigid body drone that flies in Figure-of-Eight motion with control algorithm to harvest the optimal power from the lifting

force comes from the wings. I am working in the controlling and designing for the Flight-Path to generate the optimal power during flying.

Quadrotor UAV A drone consists of four rotors and have several applications. As a developer for the project, I succeeded to build full system from scratch to stabilize the quad-rotor by applying different control algorithms to control the attitude and altitude for either the indoor and outdoor flights. I also build a simulator for the full system including the control algorithms, moreover, I build a Hardware in the Loop (HWIL) system to receive data from the drone in real-time and control it from ground station.

CanSat An Educational Nanosatellite microcontroller project utilizing various sensors, actuators, transmitters, and receivers. It consists of two Microcontrollers communicating through radio transmissions from the satellite to a ground station. The satellite collects temperature, humidity, pressure, geolocation, acceleration and orientation measurements, stores it onto an SD card, and then sent to the ground station where data was processed and visualized in a dashboard built with LabVIEW. A PCB board was designed and manufactured to electrically connect the sensors and electric components of the device. I also wrote an Arduino Library to interface with the GPS module.

Education

Kyushu University *Fukuoka, Japan*

Doctor of Philosophy Ph.D., Interdisciplinary Graduate School of Engineering Sciences (IGSES) *Oct 2014 - Sep 2017*

- **Concentration**: Adaptive Flight-Path Control of Kite Power System.

Cairo University *Cairo, Egypt*

Master of Science M.Sc., Aeronautical and Aerospace Engineering. *Sep 2012 - Sep 2014*

- **Concentration**: Design And Manufacturing of Quad-Rotor with Autopilot.

Cairo University *Cairo, Egypt*

Bachelor of Science B.Sc., Aeronautical and Aerospace Engineering. *Sep 2007 - July 2012*

- **Concentration**: Control and System Dynamics.

Training & Business trips

2 weeks	**2019**,	Business trip to **SKYPULL company**.	*Switzerland*
3 months	**2016**,	Internship at TU Delft, **Kitepower company**.	*Delft, Netherlands*
6 weeks	**2015**,	Internship at University of Tokyo, **Nakasuka's laboratory**.	*Tokyo, Japan*
1 month	**2011**,	Completed CanSat Training Program at the **SSTL** laboratory	*Cairo Uni, Egypt*
1 month	**2009**,	Completed Hand-off **Egypt Air company** training course.	*Cairo airport, Egypt*
1 month	**2008**,	Completed Hand-off Petroleum **Air Service company** training course (PAS)	*Cairo airport, Egypt*

Research Interest

Robotics, Biomechanics, Autonomous drones, Airborne Systems.

Languages

Arabic: **Native Tongue**, English: **Advanced**, Japanese: **Basic**

Interests & hobbies

Travelling, Swimming, Soccer, Fishing, Horsing, Hunting