

RAND HIDAYAH

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EDUCATION & QUALIFICATIONS

Columbia University

Candidate for Doctor of Philosophy in Mechanical Engineering

Research focus: design and control of cable-driven exoskeletons with user biofeedback. Published 2 papers with 2 under review.

New York, NY

January 2018 – June 2021

Columbia University

Master of Science in Mechanical Engineering

Classes: Robot Learning, Data Science for Mechanical Eng., Advanced Robotics, Linear System Theory, Advanced Dynamics.

New York, NY

September 2016 – December 2017

Massachusetts Institute of Technology

Science Bachelors in Mechanical Engineering

Thesis in Design of Microfluidic Channels for Microparticle Sorting. Awarded Jameel Abdul-Latif Toyota Scholarship.

Cambridge, MA

September 2008 – June 2012

SELECT EMPLOYMENT HISTORY

Graduate Research Assistant

Robotics and Rehabilitation Laboratory

New York, NY

September 2016 – Current

- Developed a 3D printed cable-driven exoskeleton system to assist in walking pattern training overground. Developed an augmented reality biofeedback program in C# that was rendered a HoloLens for the user. Published two papers on the system.
- Conducted a study with the exoskeleton with persons with stroke that targeted improvements of step height and step length after training. Results showed a significant increase.
- Currently developing a lightweight, textile exoskeleton and programming the controller to adapt to multiple-plane leg exercises for rehabilitation.

3Dmena Social Innovation

Fabrication Lab Deputy Director

Amman, Jordan

November 2015 – September 2016

- Coordinated the launch of an open co-working space, FabLab Irbid, funded by our partners, the European Union, that focused on tech skill development of Jordanian locals and Syrian refugees, launched December 2016.
- Selected machines for a fully operational rapid prototyping facility within a set budget. Communicated specifications and requirements for servicing machines with architecture firms and coordinating logistics with international vendors.
- Led rapid prototyping and IoT introductory level classes. Provided consultations for entrepreneurs requiring rapid prototyping capabilities for their hardware product ideas.

King Abdullah II Design and Development Bureau

Junior Design Engineer

Amman, Jordan

January 2014 – March 2015

- Modeled the power capabilities of a variable-gear power train for an all-terrain vehicle in rough desert conditions to select compatible engines for the speed and incline specifications required.
- Modelled and verified stress and heat load on vehicle chassis and the effects of adding military specification explosion protection body.

SELECT PUBLICATIONS

Hidayah, R *et al.* “Gait Adaptation with Post-Stroke Individuals using a Cable-Driven Active Leg Exoskeleton” IEEE Transactions on Neuroscience and Engineering, *IEEE Transactions on NeuroScience and Engineering*, 2020.

Hidayah, R. *et al.* “Walking with augmented reality: a preliminary assessment of visual feedback with a Cable-driven Active Leg Exoskeleton (C-ALEX)” Robotics and Automation Letters with IROS Option, 2019.

PRESENTATIONS & AWARDS

- CUE-V DIY Ventilator, Columbia University COVID Response \$6000 Award. One of 10/100 teams selected for the prize.
- NYC Public Impact Talks “Moving Past Human: Embracing Exoskeletons” December 21st, 2018.
- C-Alex with HoloLens for visual feedback. NYC Media Lab Demo Expo September 2018. **Best in Engineering Category.**
- Rehab Research at Weill Cornell Medical Center, NYC. “A Cable Driven Active Leg Exoskeleton (C-ALEX) on treadmill and over-ground with potential for use with stroke patients”
- H. Dean Baker Fellowship for Excellent contributions as a Teaching Assistant. 2016-2017.

SKILLS

CAD: SolidWorks, NX Unigraphics/Siemens, Autodesk Inventor, Google SketchUp; *Programming*: Python, MATLAB, C++, C#; *Controls and Simulation*: MATLAB Simulink, LabView; *CAE*: ABAQUS, ANSYS Workbench, COMSOL Mutliphysics tool; *Manufacturing*: CNC Lathe, CNC Mill, 3D-Printing, Lasercutting.