

## MUSTAFA A. GHAZI

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### EDUCATION

2018	<b>PhD Mechanical Engineering, University of Oklahoma, Norman</b> Dissertation Title: MOVIT - Monocular Vision-Based Tracking Doctoral Committee: D. P. Miller (chair), A. H. Fagg, P. J. Attar, M. C. Saha, Z. Siddique
2013	<b>MS Mechanical Engineering, University of Oklahoma, Norman</b>
2010	<b>BS Aerospace Engineering, Institute of Space Technology, Islamabad</b>

### HONORS & AWARDS

2016	Thomas Milam Graduate Student Scholarship
2012	2 <sup>nd</sup> place, Double Elimination Round, KIPR Open Autonomous Robotics Tournament
2010	Vice Chancellor's Gold Medal for best capstone project

### PROFESSIONAL EXPERIENCE

Apr 2019 - present	<b>Postdoctoral Research Fellow</b> Department of Rehabilitation Sciences, OU Health Sciences Center, Oklahoma City
Jun 2018 - Mar 2019	<b>Assistant Professor of Research</b> Department of Rehabilitation Sciences, OU Health Sciences Center, Oklahoma City
Apr 2018 - Mar 2019	<b>Robotics Engineer, Technology Lead</b> KISS Institute for Practical Robotics, Norman
Jan 2012 - Mar 2018	<b>Graduate Research and Teaching Assistant</b> School of Aerospace and Mechanical Engg., University of Oklahoma (OU), Norman
Jul 2011 - Jul 2011	<b>Research Assistant</b> Dept. of Aeronautics and Astronautics, Institute of Space Technology (IST), Islamabad
Nov 2010 - Jun 2011	<b>Research Assistant</b> Dept. of Electrical Engg., NUST College of Electrical and Mechanical Engg., Rawalpindi
Oct 2010 - Oct 2010	<b>Research Assistant</b> Dept. of Aeronautics and Astronautics, Institute of Space Technology (IST), Islamabad
Jul 2009 - Jul 2009	<b>Intern</b> Pakistan Aeronautical Complex Mirage Rebuild Factory, Kamra
Jun 2009 - Jun 2009	<b>Intern</b> Schon Air Ltd., Karachi
Jul 2008 - Aug 2008	<b>Intern</b> Atlas Honda Ltd., Karachi

### SELECT PROJECTS

- Robot assistants for promoting crawling and walking in children at risk of cerebral palsy
- Wearable upper limb rehabilitation device for stroke patients
- Peripheral neuropathy quantification device for patients receiving chemotherapy
- Monocular vision-based tracking for crawling motions of infants (PhD dissertation)
- Hand-held data logging force meter for pediatric-robotic applications
- Position control using pitch feedback - thereminist robot (MS thesis)

## PATENTS

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- Hongwu Wang, **Mustafa Ghazi**, Josiah Rippetoe, Madeleine Foote, and Sarah Brown. Wearable Focal Vibration Device and Methods of Use. Filed March 2021
- Hongwu Wang, Elizabeth Hile, **Mustafa Ghazi**, Lewis Baumgardner, Sarah Brown, and Raghuveer Chandrashekhar. Apparatus and Method for Measuring Toe Flexion and Extension. Filed December 2020

## PUBLICATIONS

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- **Mustafa Ghazi**, Josiah Rippetoe, Raghuveer Chandrashekhar and Hongwu Wang. Focal Vibration Therapy: Vibration Parameters of Effective Wearable Devices, *Applied Sciences*, March 2021, vol. 11(7), 2969
- Hongwu Wang, Raghuveer Chandrashekhar, Josiah Rippetoe, and **Mustafa Ghazi**. Focal Muscle Vibration for Stroke Rehabilitation: A Review of Vibration Parameters and Protocols, *Applied Sciences*, November 2020, vol. 10(22), 8270
- Josiah Rippetoe, **Mustafa Ghazi**, and Hongwu Wang. Quantifying Vibration Characteristics of Focal Vibration Therapy, *Proceedings of the 2019 Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Conference*, June 2019, Ottawa, ON
- **Mustafa A. Ghazi** and David P. Miller. Monocular Vision-Based Motion Capture System: A Performance Model, *Proceedings of the 2017 IEEE International Symposium on Robotics and Intelligent Systems*, October 2017, Ottawa, ON
- **Mustafa A. Ghazi**, Lei Ding, Andrew H. Fagg, Thubi H. Kolobe, and David P. Miller. Vision-Based Motion Capture System for Tracking Crawling Motions of Infants, *Proceedings of the 2017 IEEE International Conference on Mechatronics and Automation*, August 2017, Takamatsu, Japan
- **Mustafa A. Ghazi**, Michael D. Nash, Andrew H. Fagg, Lei Ding, Thubi H. A. Kolobe and David P. Miller. Novel Assistive Device for Teaching Crawling Skills to Infants, *Field and Service Robotics, Springer Tracts in Advanced Robotics*, March 2016, vol. 113, pp. 593-605
- David P. Miller, Andrew H. Fagg, Lei Ding, Thubi H. A. Kolobe, and **Mustafa A. Ghazi**. Robotic Crawling Assistance for Infants with Cerebral Palsy (extended abstract), *AAAI 2015 Workshop on Assistive Technologies Emerging from Artificial Intelligence Applied to Smart Environments*, January 2015, Austin, TX
- **Mustafa A. Ghazi** and David P. Miller. Position Control Using Pitch Feedback, *Proceedings of the Global Conference on Educational Robotics*, July 2012, Honolulu, HI

## GENERAL SKILLS

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- Testing and troubleshooting electromechanical systems
- PCB design and assembly
- Fiberglass fabrication
- Laser cutting
- Operating CNC mill, manual mill, and manual lathe
- Developing on microcontroller platforms such as Arduino, Teensy, mBed, and STM32
- Design for manufacture (3D printing, milling, injection molding)

## REFERENCES

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### **Dr. Thubi H. A. Kolobe, Professor**

Director of Research

Ann Taylor Chair in Pediatric and Developmental Disabilities

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### **Dr. Hongwu Wang, Assistant Professor**

Harold Hamm Diabetes Center Chickasaw Nation Scholar

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### **Steve Goodgame, Executive Director**

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