Clint Alex Steed

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Education

- (In progress) PhD at Ulsan National University of Science and Technology, South Korea, 2019 – Current (link)
- Masters of Mechatronic Engineering, University of Stellenbosch, March 2013 – March 2016
- Bachelor of Engineering in Mechanical Engineering, University of Stellenbosch, March 2009 - March 2013

Research interests

1. I have spent more than 4 years in the study of industry 4.0 with a particular interest in digital twins for manufacturing systems.
2. To broaden my horizons, I am employing techniques like Virtual reality, deep learning, and simulation.
3. I would love to advance my academic career with the aid of an experienced mentor at a remarkable institution.

Publications and conferences

Auyeskhan, U., Steed, C. A., Park, S., Dong J., Kim N., **(Under review)**, *Assembly-Level Design for Additive Manufacturing Decision Framework Involving Human Aspects from Virtual Reality*, Rapid Prototyping Journal

Kim, N., Steed, C. A., Park, S. H., Park, Y. H. (2022). *A Simulation method and system using a real-time agent status linkage,* (Patent No. PD21428).

Steed, C. A., Kim N. (2021). Investigating the link between human fatigue and manufacturing assembly quality. IFORS (International Federation of Operational Research Societies).

Steed, C. A. (2019). A simulation-based approach to develop a holonic robotic cell. *Industrial Robot*, *46*(1). https://doi.org/10.1108/IR-07-2018-0149

Related experience

2020 – 2023 (October): Including human operators into Cyber Physical System, UNIST

PhD research project, supervised by Prof. Namhun Kim. Investigate how to include humans into Cyber Physical systems by developing human-in-the-loop prototypes and investigating promising work further.

1. Virtual reality (VR) program that will allow human operators to control industrial robots. The operator does not need any special skills. This work is in the **early stages** of development.
2. Reduce the amount of experimental trails required to model a behavior using a deep-learning model to control the experimental conditions.
3. Decision-support workflow tool to compare additive manufacturing design alternatives. Resulted in pending publication and currently compiling patent application.
4. Simulate emergency evacuation by integrating a simulation package into VR simulation to create. Resulted in patent.

Teaching:

- Undergraduate, Simulation class for modeling factory , 2020-2021, online
- Assisted in mentoring a masters student from previous lab, 2020

Contact: Prof. Namhun Kim, (+82-52-217-2715)

2019 – 2020: Robot programming by demonstration, UNIST

PhD research project, supervised by Prof. Duck Young Kim. Investigating numerical methods of trajectory transformation for robot programming by demonstration. Due to the supervisor leaving the institution I move to a different supervisor.

Teaching:

- Undergraduate, Design practical class regarding 3D printing and CAD modeling, 2019

2017 – 2018: Employment break

I decided to move to my wife in South Korea in order to start a family. During this time I prepared for my PhD by developed a publication and completing a number of online courses.

2016 – 2017: Consulting design engineer, MSS Engineers (Entrepreneurial)

MSS engineers is a consulting engineering firm that provides turnkey solutions to a broad scope of work centered engineering. I felt myself moving away from the technological side of engineering and I left the company to purse my PhD.

1. Conceptual and systems design, project planning, and budgeting.
2. Pressure vessel certification, Code and Standard based conformance design, drawing and documenting.
3. Facilitating meetings with clients and sub-contractors.

Contact: Bradley Mercuur (+2783 376 9056)

2013 – 2016: Design of a robotic assembly cell, University of Stellenbosch

Masters degree research project under Prof. Anton Basson. Developed a robotic manufacturing cell that allowed configuration of different cost and performance. Revisiting this work resulted in a publication.

Teaching:

- Undergraduate, two weeks instruction of strength of materials module, 2015. (Course material from instructor and text book)

Contact: Prof. Anton Basson, Department of Mechanical and Mechatronic Engineering, Stellenbosch University.

Professional society memberships

IEEE (Systems, Computer), SAIMechE

Skills

Coding, software development and engineering (5+ years)

- Linux/Cloud, Network programming
- Programming languages (C#/Java, Python, C/C++, SML/F#, etc.)
- Virtual Reality development (Unity3D)
- Project and version control with Git, Github Actions, etc.

Mechanical designed and drawings

- CAD/FEM (Solidworks, Inventor, etc.)
- Basic control and power electronics

Communication: writing, presentation, verbal, etc., personal organization

Teaching

- Developing outcomes based content (material, quiz, tutorials, projects)
- Basic video editing and content management

Online courses

To bridge the gap in my knowledge of software systems I have completed several online courses.

- Object-Oriented Design (2022)
- Parallel, Concurrent, and Distributed Programming in Java (2018)
- Functional Programming Languages (2021)
- Java OOP, Data Structures, and performance (2014)
- Machine Learning (2012)
- Learning How to Learn (2013)