WILFREDO TORRES CALDERON

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EDUCATION:

Expected Dec 2021 ***University of Illinois at Urbana-Champaign (UIUC)*** ***IL, USA***
- *Doctor of Philosophy in Civil Engineering*

December 2019 ***University of Illinois at Urbana-Champaign (UIUC)*** ***IL, USA***
- *Professional Master's in computer science (MCS)*

August 2017 ***University of Illinois at Urbana-Champaign (UIUC)*** ***IL, USA***
- *Master of Science in Civil Engineering*

December 2008 ***Pontificia Universidad Católica del Perú (PUCP)*** ***Lima, Peru***
- *Bachelor of Science in Civil Engineering*

RESEARCH PROJECTS:

2020 – Present Segmenting construction activities for vision-based activity analysis.

Motivation: Limitation in data restrict the application of trained models to different environments.
Outcome: Develop a framework for productivity assessment of construction operations. Synthetized data would complement the limited access to real data and corner cases.
Skill: Deep Learning, Action Segmentation, Domain Adaptation, HOI, Pytorch.
Advisors: Mani Golparvar-Fard.

2019 – Present Vision-based activity analysis of construction agents

Motivation: Manual activity sampling of construction operations is not scalable, time-consuming, and not uniform.
Outcome: Framework for automated detection and identification of excavation activities during earthmoving operations.
Skill: Deep Learning, Action segmentation, Pytorch.
Advisors: Mani Golparvar-Fard.

2017 – 2019 Automation generation of 4d BIM models.

Motivation: Construction activities in a schedule are manually linked to its correspondent 3d BIM element.
Outcome: Machine mapping of construction activities to 3d BIM elements.
Skill: Deep Learning, Natural Language Processing, and Pytorch.
Advisors: Julia Hockenmaier and Mani Golparvar-Fard.

PROFESSIONAL EXPERIENCE:

Aug, 2016 – Present University of Illinois at Urbana Champaign Urbana-*Champaign, IL*

Research assistant Aug, 2016 – Present

- Research on Computer Vision (activity recognition and productivity assessment for Construction Activities)
- Natural Language Processing focused on automation of construction.

Jun, 2020 – Dec, 2020 Autodesk Research Toronto, ON*, Canada*

Research software developer Jun, 2020 – Present

- Develop activity detection models (based on HOI) and activity segmentation for construction operations.
- Designed a human-object contact detection vision-based model for contact tracing analysis.

Aug, 2010 – Jun, 2014 ODEBRECHT *Lima, Peru*

Planning manager Set, 2013 – Jun, 2014

- Elaborated and updated master project schedules (CPM and LBS).
- Identified, analyzed, mitigated, and monitored project risks.
- Elaborated contingency plans to meet time and on-budget goals.

Site manager Aug, 2010 – Aug, 2013

- Managed the construction of elevated reinforced concrete viaduct structures using Last Planner System (LPS).
- Used effective communication to ensure proactive health and safety worker's performance.
- Recommended design modifications based on resource optimization minimizing environmental disruptions.

Dec, 2009 – Jul, 2010 COSAPI *Lima, Peru*

Construction Assistant

- Measured on-site efficiency and assessed construction productivity and performance.
- Analyzed and monitored availability of materials to ensure timely completion of the project.

Sep, 2007 – Nov, 2009 Prisma Ingenieros Consultores *Lima, Peru*

Structural Engineer

- Performed structural analysis and design for commercial properties, government buildings, industrial facilities, public infrastructure, and other essential facilities.

TEACHING EXPERIENCE:

Aug, 2016 – Present University of Illinois at Urbana Champaign Urbana-*Champaign, IL*

Teaching Assistant, Construction Engineering and Management Aug, 2021 – Present

- Supported professor *Mani Golparvar-Fard* on teaching Construction Engineering and Management (CEE320) at the Civil and Environmental Engineering (CEE) Department.

Teaching Assistant, Computer Vision Jan, 2021 – May, 2021

- Supported professor *Saurabh Gupta* on teaching Computer Vision (CS543/ECE549) at the Electrical and Computer Engineering (ECE) Department.

Teaching Assistant, Construction Engineering and Management Aug, 2020 – Dec, 2020

- Supported professor *Mani Golparvar-Fard* on teaching Construction Engineering and Management (CS320) at the Civil and Environmental Engineering (CEE) Department.

Teaching Assistant, Computational Photography Jan, 2020 – May, 2020

- Supported professor Derek Hoiem on teaching Computational Photography (CS445) at the Computer Science (CS) Department.

Teaching Assistant, Computational Photography Aug, 2019 – Dec, 2019

- Supported professor *Derek Hoiem* on teaching Computational Photography (CS445) at the Computer Science (CS) Department.

Teaching Assistant, Computer Vision Jan, 2019 – May, 2019

- Supported professor *Lana Lazebnik* on teaching Computer Vision (CS543/ECE549) at the Computer Science (CS) Department.

Teaching Assistant, Construction Engineering and Management Aug, 2018 – Dec, 2018

- Supported professor *Mani Golparvar-Fard* on teaching Construction Engineering and Management (CEE320) at the Civil and Environmental Engineering (CEE) Department.

Teaching Assistant, Construction Engineering and Management Jan, 2018 – May, 2108

- Supported professor *Mani Golparvar-Fard* on teaching Construction Engineering and Management (CEE320) at the Civil and Environmental Engineering (CEE) Department.

Teaching Assistant, Construction Engineering and Management Aug, 2017 – Dec, 2017

- Supported professor *Mani Golparvar-Fard* on teaching Construction Engineering and Management (CEE320) at the Civil and Environmental Engineering (CEE) Department.

Teaching Assistant, Jan, 2017 – May, 2017

Visual Sensing for Civil Infrastructure Engineering and Management

- Supported professor *Mani Golparvar-Fard* on teaching Visual Sensing for Civil Infrastructure Engineering and Management (CEE598) at the Civil and Environmental Engineering (CEE) Department.

Teaching Assistant, Construction Engineering and Management Aug, 2016 – Dec, 2016

- Supported professor *Mani Golparvar-Fard* on teaching Construction Engineering and Management (CEE320) at the Civil and Environmental Engineering (CEE) Department.

PUBLICATIONS:

- *Torres Calderon, W., Roberts, D. & Golparvar-Fard, M. (2021)* ***Synthetizing pose sequences for vision-based activity analysis.*** *Computing in Civil Engineering. American Society of Civil Engineers (ASCE).*

- *Roberts, D., Torres Calderon, W., Tang, S. & Golparvar-Fard, M. (2020)* ***Vision-based construction worker activity analysis informed.*** *Computing in Civil Engineering. American Society of Civil Engineers (ASCE).*

- *Torres-Calderon, W., Chi, Y., Amer, F., & Fard, M. G. (2019, January).* ***Automated Mining of Construction Schedules for Easy and Quick Assembly of 4D BIM Simulations.*** *In ASCE International Conference on Computing in Civil Engineering 2019: Visualization, Information Modeling, and Simulation, i3CE 2019 (pp. 432-438). American Society of Civil Engineers (ASCE).*

- *Roberts, D., Wang, M., Torres Calderon, W., & Golparvar-Fard, M. (2019).* ***An Annotation Tool for Benchmarking Methods for Automated Construction Worker Pose Estimation and Activity Analysis.*** *In International Conference on Smart Infrastructure and Construction 2019 (ICSIC) Driving data-informed decision-making (pp. 307-313). ICE Publishing*

LANGUAGES:

- *Spanish (Native).*
- *English (Fluent).*

COMPUTER SKILLS:

- *Experienced with Python (Advanced), JavaScript (Advanced), Typescript (Advanced), C (intermediate), C++ (intermediate) and MATLAB (Advanced).*
- *Experienced with Primavera, Microsoft Project, AutoCAD, Revit and Navisworks.*
- *Experienced with Machine Learning libraries TensorFlow (Intermediate) and Pytorch (Advanced).*