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RESEARCH INTERESTS

Visual Analytics; Structural Health Monitoring; Computer Vision; Deep Learning; Multiview Geometry; Aerial Manipulation; Propulsion; Heat Transfer

EDUCATION

PhD., Mechanical Engineering, Purdue University, West Lafayette, IN, USA ……………………………….................. 05/2020
✛ Dissertation: *Automating Visual Data Collection and Analytics toward Lifecycle Management of Engineering Systems*

MSc., Mechanical Engineering, University of Mississippi, University, MS, USA ……………………………………………… 05/2014
✛ Thesis: *Parametric Scramjet Analysis*

BSc., Mechanical Engineering, University of Mississippi, University, MS, USA ……………………………………………… 05/2012

EMPLOYMENT HISTORY

Assistant Professor, Department of Mechanical Engineering ……………………………………………………….... 08/2020 – Present
The State University of New York, SUNY Korea, Incheon, South Korea

Research Professor, Department of Mechanical Engineering ……………………………………………………….... 08/2020 – Present
The State University of New York, Stony Brook University, Stony Brook, USA

Graduate Research Assistant, School of Mechanical Engineering …………………………………………………. 08/2014 – 05/2020
Purdue University, West Lafayette, IN, USA

Research Associate, Resilient ExtraTerrestrial Habitats Institute …………………………………………………. 05/2018 – 01/2019
Purdue University, West Lafayette, IN, USA

Graduate Research and Teaching Assistant, Department of Mechanical Engineering ……………………. 08/2012 – 05/2014
Unversity of Mississippi, University, MS, USA

RESEARCH RECORDS

1. **Automating Visual Assessment of Infrastructure exploiting Computer Vision and Big Visual Data (Principal Investigator)**   03/2021 – 03/2022
   - Award funding of 30 million KRW (equivalent to 30k USD) from NRF (National Research Foundation of Korea) under Grant No. NRF-2021R1G1A1012298
   - 1 journal paper accepted **[J10]**

2. **Integrating Human and Machine for Post-Disaster Visual Data Analytics (Research Assistant)** 01/2019 – 07/2020
   - Supported by NSF under Grant No. NSF-1835473
   - 2 journal paper published **[J7], [J9]**; 1 journal paper accepted **[J10]**; 1 conference paper accepted **[C6]**; 1 proposal submitted **[P5]**

3. **STORM: Safeguarding Cultural Heritage through Organisational Resources Management (Research Assistant)** 04/2017 – 05/2020
   - Collaboration with European Union Grant No. H2020 n. 700191
   - 1 conference paper published **[C4]**; 1 journal paper submitted **[J11]**

4. **RETH: Resilience ExtraTerrestrial Habitat (Research Assistant)** 08/2018 – 01/2019
   - Supported by New Horizon Program at Purdue University and NASA (The National Aeronautics and Space Administration)
   - 3D models & videos were published in numerous articles worldwide (e.g., usatoday.com, space.com, etc.); Available in https://phys.org/news/2019-07-humans-lava-tubes-moon.html
   - 1 conference paper published **[C5]**

5. **Active Citizen Engagement to Enable Lifecycle Management of Infrastructure Systems (Research Assistant)** 05/2017 – 08/2018
   - Supported by NSF under Grant No. NSF-1645047
   - 2 journal paper published **[J6], [J8]**

6. **Vision-based Visual Inspection System for A Large Number of Aerial Images (Research Assistant)** 01/2017 – 12/2017
   - **1 proposal generated and funded [P5],** 1 journal paper published **[J6]**

7. **Sensor Integrated Autonomous Flight UAV System Development (Research Assistant)** 05/2016 – Present
   - 2 proposal generated **[P1]**, **[P2]**

8. **Automated Region-of-Interest Localization and Classification for Facility Visual Assessment (Research Assistant)** 05/2015 – 05/2017
   - 1 journal paper published **[J5]**; 1 conference paper published **[C2]**; 2 proposal generated **[P3], [P5]**

9. **Image-Based Collection and Measurements for Construction Pay Items (Research Assistant)** 05/2015 – 08/2017
   - Supported by INDOT under Grant No. SPR-4006
   - 1 journal paper published **[J4]**; 1 conference paper published **[C1]**; 1 technical Report published **[C3]**

10. **Parametric Analysis of Scramjet Engine Varying Material and Fuel (Research Assistant)** 08/2012 – 05/2014
    - Supported graduate program by University of Mississippi.
    - 3 journal papers published **[J1]**, **[J2]**, **[J3]**; 1 Master thesis generated

TEACHING / MENTORING RECORDS

Course Teaching

MEC 301: Thermodynamics at *the State University of New York, SUNY Korea*: Recorded the highest course evaluation score among the department   Fa2020

MEC 363: Mechanics of Materials at *the State University of New York, SUNY Korea*   Sp2021

Student Advising

Supervisor, Ph.D. Student, *the State University of New York, SUNY Korea*

- **Jonathan Boyack**: Smart and resilience city application exploiting visual data and computer vision techniques   2020 – Present

Dissertation Committee, **Ph.D. Student,** *the State University of New York, SUNY Korea*

- **Mark Anthony Roter**: Designing tidal turbine (HATT) blades utilizing Artificial Neural Network (ANN) where I serve as chair of the committee   2021 – Present

Supervisor, **Undergaduate Student**, *the State University of New York, SUNY Korea*

- **Jee Won Lee**: SLAM implementation for visual assessment (Fa2020, Sp2021)
- **Hansol Lim**: Electrical land rover system for visual assessment (Fa2020, Sp2021)
- **Prince-David Malendele**: SLAM implementation for visual assessment (Fa2020, Sp2021)

Research Mentor, **Undergraduate Research Course**, *Purdue University*

- **Wookjin Chung**: 6 credits of undergraduate research (Sp2018, Fal2019)
- **Jonghyun Park**: 6 credits of undergraduate research (Sp2018, Fa2019)
- **Gun Wook Park**: 6 credits of undergraduate research (Sp2017, Fa2017)
- **Sharda Parth**: 3 credits of undergraduate research (Sp2018)
- **Yisong Yin**: 6 credits of undergraduate research (Fa2016, Sp2017)

STEM Curriculum Development for K-12 Students

TRAILS: Teachers and Researchers Advancing Integrated Lessons in STEM, *Purdue University*   2016 – 2017

- Supported by NSF under Grant No. NSF-1513248
- Promote practices that increase students' motivations and capacities to pursue careers in STEM area.

SLED: Science Learning through Engineering Design   2015 – 2016

- Supported by NSF under Grant No. NSF-0962840
- Collaboration between STEM disciplinary faculty and grades 3-6 teachers to develop engineering-based tasks.

Teaching and Educational Services

- **TRAILS K-12 Outreach**: Collaborated Eng. Project & Activity with 8 high schools and 12 elementary schools in Indiana

HONORS & AWARDS

Awards

Honorable Mentions from 3rd Midwest Smart Structure Colloquium, *University of Illinois (UIUC)*   10/2017

Travel Award & Workshop Invitation from *NHERI RAPID Experimental Facility, NSF*   07/2019

- This award selects 20 attendees who has professional research background for the RAPID 4 days Equipment Training Workshop at the University of Washington, Seattle, as well as support up to $1,500 Travel Fund.

Travel Award for Conference from College of Engineering, *Purdue University*   05/2018
- This award recognizes excellence PhD candidates supporting up to $1,000 for 2019 EWSHM conference at Hilton Hotel, Manchester, UK

Resident Assistant Scholarship from University of Mississippi   08/2012 – 08/2013

Honor Program Scholarship from University of Mississippi   01/2011
- This scholarship is awarded to prominent undergraduate students in the School of Engineering.

Professional Affiliation
- President of Siloam Purdue Presbyterian church   01/2018 – 01/2019
- President of Korean Student Association (Olemiss KSA), *University of Mississippi*   05/2014 – 08/2014
- American Society of Engineering Education (ASEE)   since 08/2017
- American Society of Mechanical Engineering (ASME)   since 04/2011

PROFESSIONAL LEADERSHIP EXPERIENCE

Colloquium Director: 4ᵗʰ Midwest Smart Structure Colloquium at *Purdue University*, West Lafayette, IN, USA.   04/2019
- Organize, design, and direct a 3-days colloquium with 50 participants which is held in Bowen Laboratroy at Purdue University

IT Manager: IISL Laboratory, *Purdue University*, West Lafayette, IN, USA   03/2016 – 05/2020
- Manage the web-site and web-service of IISL laboratory at Purdue University

K-12 video Data Collector & Analyzer: TRAILS & SLED research groups (NSF-1513248 & NSF-0962840), Purdue University, West Lafayette, IN, USA   09/2015 – 05/2017
- Analyze the video data to observe K-12 student behavior in scientific & communicate with teachers and students to proceed a newly developed curriculum from our engineering education team

Volunteer Staff Caregiver: ReVitalise, Southport, Merseyside, UK   09/2009 – 10/2010
- Operate and maintain medical devices; train weekly volunteers for the devices

PROFESSIONAL TALKS & PRESENTATION

[T4]	Research Seminar, Korea Institute of Construction Technology (KICT), Ilsan, South Korea	09/2020
[T3]	Professional Presentation, Midwest Smart Structure Colloquium (MSSC), Midwest Area US	10/2016, 10/2017, 4/2019
[T2]	Professional Presentation, 9th European Workshop on SHM, Manchester, UK, July	08/2018
[T1]	Poster Session, Herrick board meeting, West Lafayette, IN, USA	11/2015, 11/2016, 11/2018

PROPOSAL DEVELOPMENT to U.S. GOVERNMENT

[P5]	**Active Citizen Engagement to Enable Lifecycle Management of Infrastructure Systems**	07/2016

- **(Funded** under Grant No. **CMMI-1645047)** Co-authored successful proposal with funded $100,000 from National Science Foundation (NSF).

[P4]	**Automating Damage Quantification, Localization and BIM Updating Using Voluminous Optical Data**	02/2020

- **(Submitted** to NSF HDBE program**)** Co-authored successful proposal and requested $400,000 to National Science Foundation (NSF).

[P3]	**HDBE (E-Defense): Enabling Building Damage Assessment by Engaging Remote Experts**	01/2018

- Co-authored and requrested $700,000 to National Science Foundation (NSF).

[P3]	**S&SA: Autonomous Infrastructure Inspection and Condition-Based Maintenance**	05/2017

- Co-authored proposal and requested to National Science Foundation (NSF).

[P1]	**S&SA: Reconfigurable Aerial Robots for Intelligent Assessment to Industrial Disasters**	11/2016

- Co-authored proposal and requested to National Science Foundation (NSF).

PEER-REVIEWED JOURNAL PAPERS

[J11] **Jongseong Choi**, Lazaros Toumanidis, Shirley J. Dyke, Chul Min Yeum, Patrikakis Charalampos, Ali Lenjani, Xiaoyu Liu, & Panagiotis Kasnesis (2020), Automated Graffiti Detection: A Novel Approach for Maintaining Historical Structures in Community, *ACM Journal on Computing and Cultural Heritage (JOCCH),* submitted.

[J10] **Jongseong Choi**, Ju An Park, Shirley J. Dyke, Chul Min Yeum, Xiaoyu Liu, Ali Lenjani, & Ilias Bilionis (2021), Similarity Learning to Enable Buliding Search in Post-event Image Data, *Computer-Aided Civil and Infrastructure Engineering*, accepted.

[J9] Xiaoyu Liu, Shirley J. Dyke, Chul Min Yeum, Ilias Bilionis, Ali Lenjani, & **Jongseong Choi** (2020), Automated Indoor Image Localization to Support Post-Event Building Assessment. *Sensors*, 20(6), 1610.

[J8] **Jongseong Choi** & Shirley J. Dyke (2020), CrowdLIM: Crowdsourcing to Enable Lifecycle Infrastructure Management. *Computers in Industry*, 115, 103185.

[J7] Ali Lenjani, Shirley J. Dyke, Ilias Bilionis, Chul Min Yeum, Kenzo Kamiya, **Jongseong Choi**, Xiaoyu Liu, & Arindam G. Chowdhury (2020), Towards fully automated post-event data collection and analysis: pre-event and post-event information fusion. *Engineering Structure,* 109884.

[J6] Chul Min Yeum, **Jongseong Choi,** & Shirley J. Dyke. (2019), Automated region-of-interest localization and classification for vision-based visual assessment of civil infrastructure. *Structural Health Monitoring*, 1475921718765419.

[J5] **Jongseong Choi**, Chul Min Yeum, Shirley J. Dyke, & Mohammad J. Jahanshahi (2018), Computer-aided approach for rapid post-event visual evaluation of a building façade. *Sensors*, 18(9), 3017.

[J4] Chul Min Yeum, **Jongseong Choi**, & Shirley J. Dyke (2017), Autonomous image localization for visual inspection of civil infrastructure. *Smart Materials and Structures*, 26(3), 035051.

[J3] Jeffrey A. Roux, **Jongseong Choi**, & Neerad Shakya (2014), Parametric scramjet cycle analysis for nonideal mass flow rate. *Journal of Thermophysics and Heat Transfer*, 28(1), 166-171.

[J2] Jeffrey A. Roux, Neerad Shakya, & **Jongseong Choi** (2013), Scramjet: minimum thrust-specific fuel consumption with material limit. *Journal of Thermophysics and Heat Transfer*, 27(2), 367-368.

[J1] Jeffrey A. Roux, Neerad Shakya, & **Jongseong Choi** (2012), Revised parametric ideal scramjet cycle analysis. *Journal of Thermophysics and Heat Transfer,* 27(1), 178-183.

CONFERENCE PROCEEDINGS & OTHER ARTICLES

[C6] Shirley J. Dyke, Xiaoyu Liu, **Jongseong Choi**, Chul Min Yeum, Juan Park, Ali Lenjani, Julio A. Ramirez, & Randall Poston (2020), "Learning from Earthquakes Using the Automatic Reconnaissance Image Organizer," Proceedings of 17th World Conference on Earthquake Engineering, Sendai, Japan, Sep 13-18, 2020, accepted

[C5] Audai Theinat, Anahita Modiriasari, Antonio Bobet, Jay Melosh, Shirley J. Dyke, Julio A. Ramirez, **Jongseong Choi**, Amin Maghareh, & Daniel Gomez (2019, March), "Geology Explorations of Lava Tubes in the National Beds Lava Monuments," In Lunar and Planetary Science Conference (Vol. 50).

[C4] **Jongseong Choi**, Chul Min Yeum, Shirley J. Dyke, Mohammad R. Jahanshahi, & Gun Wook Park (2018), "Rapid Vision-Based Inspection of Nonstructural Components in Buildings," Proceedings of the 9th European Workshop on Structural Health Monitoring, Manchester, UK, July 10-13, 2018.

[C3] Chul Min Yeum, Anup Mohan, Shirley J. Dyke, Mohammad R. Jahanshahi, **Jongseong Choi**, Ziyi Zhao, & Julio A. Ramirez (2017), "Image-Based Collection and Measurements for Construction Pay Items," Purdue University e-publidation.

[C2] Chul Min Yeum, **Jongseong Choi**, & Shirley J. Dyke (2017), "Automated Region-of-Interest Localization and Classification for Visual Assessment on Civil Infrastructure," Proceedings of the 11th International Workshop on Structural Health Monitoring, Stanford, CA, September 12-14, 2017.

[C1] Chul Min Yeum, **Jongseong Choi**, & Shirley J. Dyke (2017), "Image Localization for Computer-enhanced Visual Inspection of Civil Infrastructure," Proceedings of Engineering Mechanics Institute Conference, San Diago, CA, United States, June 4-7, 2017.