

Youngkyu Kim

Email: youngkyu_kim@berkeley.edu

EDUCATION:

- University of California, Berkeley
Ph.D. student in Mechanical Engineering 2016 ~ present
Overall GPA: 4.00/4.00
Adviser: Tarek I. Zohdi
- University of California, Berkeley
Master of Science in Mechanical Engineering December 15, 2017
Overall GPA: 4.00/4.00
Adviser: Tarek I. Zohdi
- Pohang University of Science and Technology (POSTECH) Pohang, South Korea
Bachelor of Science, *summa cum laude*, Mechanical Engineering August 14, 2015
Overall GPA: 4.11/4.3; Major GPA: 4.20/4.3
Rank: 1/16
- SCHOLARSHIP:
Block Grant Award: June 2018, January 2019
Fulbright Graduate Study Award (Principal Candidate): September 15, 2015
POSTECH Scholarship for Undergraduate Research: November 2014 ~ March 2015
Part-time Scholarship for mentoring a major subject: October 2014 ~ December 2014
MIRAE ASSET Scholarship: July 2013
POSTECH Semester Exchange Program Scholarship: July 2013
Special Scholarship: November 2012
Excellent Achievement Scholarship: March 2010, September 2012, March 2013
Government Scholarship: May 2009, July 2009, January 2012, July 2012, January 2013, July 2013, July 2014, February 2015

EXPERIENCE:

Research Experience

- Lawrence Livermore National Laboratory. May 2019-August 2019
- Summer Intern: My assignment is to apply a reduced order model to the thermal state estimation so temperature profile of additive manufacturing can be monitored in real-time
- University of California, Berkeley November 2018-December 2019
- ARM Project: Mixed multi-angle robotic IR camera control of thermomechanical surface processes
My role: to develop thermomechanical model for additive manufacturing and this model will be used for Kalman Filters in real-time
- University of California, Berkeley January 10, 2017-December 15, 2017
- A study for a master's degree in Computational Manufacturing and Materials Research Laboratory
Research on Simulation of Electrically Aided Hot Pressing Based on a Discrete Element Method with Evolutionary Machine Learning
- POSTECH, Pohang, South Korea May 22, 2017-August 11, 2017
- A research internship in Micro Manufacturing and Multiscale Simulation Laboratory
My research goal: to simulate a temperature profile of an electric bus battery using a finite element

method and to optimize a cooling system

My role: to develop a heat generation model, do finite element analysis, and determine the optimum cooling system

Hackathon Experience

Siemens Corporate Technology Hackathon Challenge 2018

April 13, 2018-April 14, 2018

- Fine-tuned functionalized graded material through evolutionary machine learning algorithms to minimize blade deformations
- Pitched the idea that the algorithm output informs an SLS manufacturing process to build the desired microstructure, achieving the desired functionality of the blade

PUBLICATIONS

- **Kim, Y.**, Choi, Y., Widemann, D., & Zohdi, T. I. (Submitted). Efficient nonlinear manifold reduced order model. *Advances in Neural Information Processing Systems*.
- **Kim, Y.**, Choi, Y., Widemann, D., & Zohdi, T. I. (Submitted). A fast and accurate physics-informed neural network reduced order model with shallow masked autoencoder. *Journal of Computational Physics*.
- Maeshima, T.*, **Kim, Y.***, & Zohdi, T. I. (2020). Particle-scale numerical modeling of thermo-mechanical phenomena for additive manufacturing using the material point method. *Computational Particle Mechanics*, 1-11. (*Equal contribution)
- **Kim, Y.**, Alcantara, D., & Zohdi, T. I. (2020). Thermal state estimation of fused deposition modeling in additive manufacturing processes using Kalman filters. *International Journal for Numerical Methods in Engineering*.
- Jeon, H., **Kim, Y.** & Lim, G. (2016). Continuous particle separation using pressure-driven flow-induced miniaturizing free-flow electrophoresis (PDF-induced μ -FFE). *Scientific reports*, 6.
- Seong, Y., **Kim, Y.**, German, R., Kim, S., Kim, S. G., Kim, S. J., ... & Park, S. J. (2016). Dominant mechanisms of the sintering of copper nano-powders depending on the crystal misalignment. *Computational Materials Science*, 123, 164-175.

PATENTS

- "A particle separation device using pressure-driven flow-induced miniaturizing free-flow electrophoresis (PDF-induced μ -FFE)", Lim, G., Jeon, H. & **Kim, Y.**, Republic of Korea Patent 10-1796184 (2017)