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School Address

Mechanical Engineering and Material Science Department
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EDUCATION

Doctor of Philosophy, Mechanical Engineering and Material Science

Duke University, Durham, NC

July 2018 - Now

Cumulative GPA 3.76/4.00

Master of Science in Engineering (thesis-based), Mechanical Engineering

Johns Hopkins University, Baltimore, MD

May 2018

Cumulative GPA 3.76/4.00

Bachelor of Engineering, Mechanical Engineering

Institut Teknologi Bandung, West Java, Indonesia

May 2015

Thesis: Design and Fabrication of an Affordable Transfemoral Prosthesis

RESEARCH EXPERIENCE

Biomaterials Processing and Characterization Lab

Duke University, Durham, NC

Gall Lab - PhD Student

August 2018 - now

PI: Ken Gall

- Research focus: Additive manufacture and processing of elastomeric polymers.
- Worked with a team of clinicians and engineers in developing and characterizing an additively manufactured elastomeric vaginal-prolapse mesh. Designed and deployed various FDM 3D-printer customization (both hardware and software) to support printing of highly elastic materials.
- Developed a platform for fabrication of bioresorbable 3D-printed implants. Synthesized material in-house and characterized material with various techniques, including but not limited to DSC, NMR, FTIR, XRD, SEM.
- Teaching Assistant, ME221: Introduction to Materials.

Bioinspired Material and Mechanical System Lab

Hopkins Extreme Materials Insitute

Johns Hopkins University, Baltimore, MD

Kang Lab - Graduate Research Assistant

August 2016 - May 2018

PI: Sung Hoon Kang

- Worked with a team of clinicians and engineers developing an FDA-compliant pediatric prosthetic heart conduit capable of controlled self-expansion.
- Laid foundation, designed, and fabricated iterations of conduit.
- Co-designed and fabricated a cardiovascular-flow test rig.
- Characterization (low-force tension test, SEM, DSC, DMA, etc.) and additive fabrication of novel conduit designs.

Biomolecular Mechanics and Nanotechnology Lab

Biodesign Institute

Arizona State University, Tempe, AZ

Hariadi Lab - Visiting Research Scholar

June 2017 - August 2017

PI: Rizal Fajar Hariadi

- Developed a microtubule analog using dynamic DNA nanotechnology by coupling polymerization and fuel consumption with *de novo* DNA nanostructure design.
- Top summer researcher.
- Publication under preparation.

Nanostructural Engineering Laboratory
Osaka University, Osaka, Japan

Hirahara Lab - Visiting Research Scholar

January 2013 - August 2013

PI: Kaori Hirahara

- Full-time semester long independent research, acquired grade of A+. Topic: Generation of micro/nano-bubbles by water electrolysis using carbon nanotube-resin composite film as electrode.
- Fully funded by JASSO under FrontierLab@OsakaU scheme.
- Result presented at MRS Fall Meeting, Boston, 2014.

Institut Teknologi Bandung, West Java, Indonesia

Biomechanics Lab - Research Assistant

2013 - 2015

PI: Andi Isra Mahyuddin

- Designed and fabricated a low-cost leg prosthetic prototype in Indonesia based on optical gait-analysis and market needs. Final design costs less than 1/10 of prosthesis available on Indonesian market and was spun-off into a startup.

PAPERS, PRESENTATIONS, AND PROCEEDINGS

- Emilio O Bachtiar, Ozan Erol, Michal Millrod, Runhan Tao, David H Gracias, Lewis H Romer, Sung Hoon Kang. 3D printing and characterizations of a soft and biostable elastomer with high flexibility and strength for biomedical applications. *Journal of the Mechanical Behavior of Biomedical Materials*. 2020.
- Ozan Erol, **Emilio Bachtiar**, Runhan Tao, Azra Horowitz, Narutoshi Hibino, Lewis Romer, David H. Gracias, and Sung Hoon Kang. Self-Adaptive Cardiovascular Paediatric Conduits to Accommodate Growth. (October 2019). Poster session for SES2019, St. Louis, MO.
- Ozan Erol, **Emilio Bachtiar**, Narutoshi Hibino, Lewis Romer, David H. Gracias, and Sung Hoon Kang. (2018, October). Self-Adaptive 3D-Printed RV-PA Conduits for Pediatrics. Poster session presented at the annual meeting of the Biomedical Engineering Society, Atlanta, GA.
- Sung Hoon Kang, Galip Ozan Erol, **Emilio Bachtiar**, Azra Horowitz. (2018, September). Architected Cardiovascular Implants for Accommodating Growth. Presented at IUTAM Symposium Architected Materials Mechanics, Chicago, IL.
- Ozan Erol, **Emilio Bachtiar**, Narutoshi Hibino, Lewis Romer, David H. Gracias, and Sung Hoon Kang. (2018, September). Self-Adaptive 3D-Printed RV-PA Conduits for Pediatrics. Poster session presented at the Triangle Student Research Competition, Durham, NC.
- **B. Emilio**, K. Hirahara, H. Nishimura (2014, December). Generation of Micro/Nano Bubbles by Water Electrolysis Using Carbon Nanotubes/Resin Composite Film as the Electrode. Paper presented at Materials Research Society Fall Meeting 2014: Symposium MM, Boston. Cambridge: Cambridge University Press
- **B. Emilio**, et al (2015, November). Design and Fabrication of an Affordable Transfemoral Prosthetic Leg. *Applied Mechanics and Materials*. 2016.

TEACHING AND OUTREACH

Johns Hopkins University

Materials Selection: Biomaterials - Guest Lecturer

November 2017

- Invited by Prof. Sung Hoon Kang as a guest lecturer covering biomaterials for Materials Selection undergraduate junior level class.

Johns Hopkins University

Center for Talented Youth Summer Program - Mentor

May 2017

- Introduced STEM research and laboratories to high-potential middle school students.

PROFESSIONAL, LEADERSHIP, EXTRACURRICULAR

Restor3d

Consulting Researcher

January 2019 - now

- Restor3d is a startup spun-off from Duke University research working in the additively manufactured medical device space.
- Worked in the development of a medical implant and research support for a 510(k) clearance in conjunction with PhD research.

Creador

Research Analyst Intern

April 2016 - June 2016

- Creador is a boutique private equity firm with 1 billion USD AUM.
- Conducted primary market research for Nipress auto battery and benchmarked NBFIs in Malaysia and Indonesia in support of a prospective deal.

KINETIK

CTO

January 2015 - August 2016

- Medical device startup focused in affordable solutions with maximum impact. Seed funded 50000 USD (non-dilutive).
- Responsible for product and relationship development. Initiated collaboration with 2 prominent NGOs and developed 2 mainline product.

ITB Outdoor Adventures Club

Member

2010-2015

- Co-managed a team of +-40 on a search and rescue operation of a missing hiker
- Led a team of +-30 on an outdoors survival course

Chevron University Partnership Program

Drilling Engineer - Summer Intern

June 2013 - August 2013

- Reduced accidents and violations via analysis of database for the Reliability and Compliance division. Responsible for preliminary feasibility analysis of drill pipe substitution for production tubing, saving 30% of drilling costs.
- Awarded top intern.

AWARDS AND SCHOLARSHIPS

- **Best Poster in Materials Processing:** Poster session presented at the Triangle Student Research Competition. Durham, NC. 2018, September.
- **Indonesian Endowment Fund for Education Scholarship:** Full-ride scholarship for MS degree.
- **ITB Academic Achievement Scholarship:** Scholarship covering undergraduate tuition.
- **JASSO Scholarship:** Full-ride scholarship for research exchange at Osaka University.
- **Research and Technology Ministry Startup Fund:** 50k USD non-dilutive startup funding.
- **Indonesian Young Thought-Leader on the Environment 2015:** Granted by World Resources Institute.
- **Top 3 National Innovation Contest at Institut Teknologi Bandung:** Engineering design innovation contest.

SKILLS AND TEST SCORES

- **Standardized Test Scores:** GRE: 166V(97%), 167Q(95%), TOEFL: 113.
- **Coding Skills:** Python (+5000, passed Google Foobar), Matlab, Arduino IDE, L^AT_EX, C#.
- **Other Skills:** CAD (Inventor, Solidworks, Slicers), FEM (ANSYS, ABAQUS, LISA)
- **Languages:** English (Fluent/Bilingual), Indonesian (Native)