AUGUST DOMEL, Ph.D.

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EDUCATION

HARVARD UNIVERSITY — Cambridge, MA

Ph.D., Engineering Sciences: Materials Science and Mechanical Engineering — March 2019

- Dissertation: *Bio-Inspired Design for Mechanical and Biomechanical Applications*
- Research featured in *National Geographic, Newsweek, Condé Nast, Syfy*
- Led and represented Dudley House (one of Harvard's 13 student Houses) as Dudley House Fellow
- Intramural football and basketball champion

Master of Science, Engineering Sciences: Materials Science and Mechanical Engineering — March 2016

NORTHWESTERN UNIVERSITY — Evanston, IL

Bachelor of Science, Mechanical Engineering — March 2014

- GPA: 3.99/4.00
- Graduated #1 in School of Engineering and Applied Science
- Engineers Without Borders (Co-Founder), Mechanical Engineering Undergraduate Advisory Board

WORK EXPERIENCE

FORCE IMPACT TECHNOLOGIES (FIT) — Los Angeles, CA

Director of Product & Chief Scientist — Oct. 2020 – Present

FIT is a head health tech startup developing novel biotechnologies to understand and prevent traumatic brain injury, with 10 employees and $15M valuation in 2019

- Responsible for product vision and validation, app/software GUI design, development of proprietary algorithms for measuring brain damage, development of metrics to drive actionable insights for recovery and injury prevention, and creation and validation of impact detection algorithm via video analysis
- Delivered product (electronic mouthguard wearable) ahead of schedule and under budget in late 2020/2021
- Raising $6M pre-A round, involving strategic tech positioning, outreach, go-to-market plan, and pitches, securing $3M in soft-circled commitment

STANFORD UNIVERSITY — Palo Alto, CA

Post-Doctoral Fellowship (Bioengineering) — March 2019 – Oct. 2020

- Managed bioengineering lab research for a team of 4 postdocs, 3 PhD students, and 10 research assistants, including the planning and execution of experiments, budgeting, and commercial partnerships
- Led development of smart electronic mouthguard embedded with inertial sensors to measure the severity of head impacts, and the development of the first head kinematics database for tracking head impact-caused brain injury in sports, in collaboration with the Federal Interagency Traumatic Brain Injury Research team
- Executed field/clinical studies across hundreds of youth and collegiate athletes for understanding the effects of head impacts on brain health
- Raised $1 million via NIH funding to launch startup company out of the bioengineering lab
  - Accepted to StartX, Cardinal Ventures, and Lean LaunchPad accelerators
  - Adaptive shock absorption tech featured in *NY Times*

HARVARD UNIVERSITY — Cambridge, MA

Bertoldi Lab for Materials & Structures by Design — June 2016 – March 2019

- Led a team of interns and professors across several disciplines to conceive, design, and prototype shark skin-inspired 3D printed surfaces that dramatically enhance aerodynamic performance of airfoils
  - Initiated commercialization partnerships with several major companies and start-ups to develop new products (in both consumer goods and aircraft space) that include these designs
  - Featured in *National Geographic, Newsweek, Physics World, Condé Nast*
- Led a multidisciplinary team to design a highly functional, multi-purpose, octopus-inspired soft robot for use in manufacturing assembly lines
  - Worked with collaborators across China, Germany, and USA to manufacture, test, and show functionality
  - Featured in *Syfy, The Televisor, Tech Times*

OTHER EXPERIENCE

- *Internships:* Motorola Mobility (*Engineering Intern*), Motorola Solutions (*Mechanical Engineering Intern*), Engineering Systems Inc. (*Biomechanical Engineering Intern)*
- *Research:* Argonne National Lab (*Research Assistant*), Neuroscience & Robotics Lab (*Research Assistant*), Computational Mechanics Lab (*Research Assistant*), MIT AgeLab (*Research Assistant*)
- *Academic Projects:* modeled auxetic stent for use during angioplasty procedure, redesigned Boeing oxygen mask deployment system to reduce the weight of the current system by 40% while maintaining the same speed and reliability (presented work to Boeing design team), designed wine opener for Project Revolve that eliminates pain for those with arthritis and other disabilities of the wrist (presented design with video evidence to Project Revolve's marketing team), designed plastic toy spider injection mold to create several hundred toy spiders in a few hours, redesigned p-n junction CdTe Solar Cell to improve theoretical efficiency

PEER-REVIEWED PUBLICATIONS & PRESENTATIONS

SELECT LEAD AUTHOR PUBLICATIONS

- "A New Open-Access Platform for Measuring and Sharing mTBI Data." *Scientific Reports* (2021): vol 11.
- "Shark Skin-Inspired Designs That Improve Aerodynamic Performance." *Journal of the Royal Society Interface* (2018): vol 15. Press Coverage*: National Geographic, Newsweek, Physics World, Condé Nast*
- "Validation and Comparison of Instrumented Mouthguards in Measuring Head Kinematics and Brain Deformation in Football Impacts." *Annals of Biomedical Engineering* (2020). Special Issue: Concussion Biomechanics in Football.
- "White Matter Tract-Oriented Deformation Is Dependent on Real-Time Axonal Fiber Orientation" *Journal of Neurotrauma* (2021): vol 38.
- "Octopus Arm-Inspired Tapered Soft Actuators with Suckers for Improved Grasping." *Soft Robotics* (2020): vol 7. Cover Article. Press Coverage*: Syfy Network, Tech Times, The Televisor*
- "Hydrodynamic Properties of Biomimetic Shark Skin: Effect of Denticle Size and Swimming Speed." *Bioinspiration & Biomimetics* (2018): vol 13.
- "Programmable Hierarchical Kirigami." *Advanced Functional Materials* (2019): vol 30.

SELECT PRESENTATIONS

- "Repetitive Head Impacts and Brain Health." *NFL, Engineering Committee*. Indianapolis, IN, February 27, 2020.
- "IoT, 5G, and the Future of Medical Technology." *Med Tech Interrupt*. Los Angeles, CA, October 17, 2019.
- "Smart Mouthguard to Investigate the Effects of Head Impacts on Brain Health." *State of Medicine*. Stanford, CA, October 8, 2019.
- "Novel Constant Force Football Helmet Design and Computational Study to Reduce Brain Tissue Strain." *Biomedical Engineering Society Annual Meeting*. Philadelphia, PA, October 19, 2019.
- "Assessing The Relative Impact of Smartwatch and Smartphone Use on Workload, Attention, and Driving." *Human Factors and Ergonomics Society New England Conference*. Cambridge, MA, April 17, 2015.

For full list of 36 peer-reviewed publications and presentations, see Google Scholar page.

CERTIFICATIONS, PATENTS, & SKILLS

CERTIFICATIONS

- Passed Professional Engineering License Exam (Mechanical)
- Fundamentals of Engineering License #: 061.038010

PATENTS

- Patent No. 10,882,606, "Aerodynamic Devices for Enhancing Lift and Reducing Drag"
- Provisional Patent 62/907384, "Soft Collapsible Hydraulic Shock Absorber"
- Provisional Patent 086624-000023, "Systems and Methods for Calculating Impact Score"

SKILLS

- CAD and FEA skills: SolidWorks, Unigraphics NX, Pro/ENGINEER, Abaqus, Comsol
- Programming skills: Matlab, Python
- Misc. skills: fundraising, 3D printing, laser cutting, data analysis, project and product management