

Jacob Clark Ruprecht

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Education

Duke University – Durham, North Carolina

May 2016

Pratt School of Engineering, Bachelors of Science in Biomedical Engineering, minor in Economics

GPA: 3.72/4.0, Dean's List: Fall 2015, Spring 2015, Fall 2013, and Fall 2012

University of Sydney – Sydney, NSW, Australia

July 2014 – November 2014

Study Abroad Program

Skills and Projects

- Performed extensive data collection using LabVIEW, and analysis of that data using MATLAB.
 - Conducted tension, unconfined compression, and three point bending testing on a variety of tissues and materials commonly used in medical implants. Used this data to create stress-strain curves for each tissue or material in MATLAB and determine the elastic modulus, yield stress, and ultimate stress. Compared mechanical properties between tissues and materials to evaluate their fidelity for use in medical devices
 - Performed a foam impact test with varying thickness and types of foam and evaluated the Head Injury Criteria and energy dissipation for each impact to investigate the properties of an ideal impact absorber
 - Utilized an accelerometer to collect acceleration data during activities of daily living over different time periods. Evaluated the resultant acceleration on the head and the utility of accelerometers in tracking position over time
- Iteratively designed a more biofidelic neck for the Hybrid III 6-year-old crash test dummy in a team environment; design included modeling in SolidWorks, finite element analysis in LS-DYNA, and 3D printing a final model.
- Built medical devices including a baby incubator, pneumotachometer, & pulse plethysmograph with Arduino. Required implementing various signal transducers, wiring them into an LCD shield for output, and filtering excess noise out of the signal.

Professional Experience

Duke Orthopedic Research Lab – Durham, North Carolina

January 2015 – May 2016

Pratt Research Fellowship: Innovations in Meniscal Repair

- Collaborated with 5 team members to achieve project goals, trained less experienced team members in lab technique
- Utilized statistical analysis on large sets of data in order to compare the effectiveness of four different scaffolds for integrative repair in the meniscus
- Took initiative to write a Matlab program that automated data analysis and improved efficiency
- Co-authored an abstract that was selected for a Paper Presentation at the ORS 2016 Annual Meeting

Duke Developing World Healthcare Technologies Lab – Durham, NC

May 2014 – July 2014

Research Assistant

- Used engineering knowledge to review documents in the lab's online biomedical resource library and created concise summaries to improve technicians' ability to search for and locate the correct document
- Researched file types and translation methods and successfully recommended those that would maximize readability, accessibility in low-bandwidth areas, and ease of translation

Beird Consulting Group – Naperville, Illinois

May 2013 – August 2013, December 2014

Pricing and Data Quality Analyst

- Tracked and analyzed data discrepancies between multiple pricing systems
- Performed extensive data analysis in Microsoft Excel including tools such as pivot tables and v-lookups

Leadership Activities and Recognition

- Pi Kappa Phi Fraternity, Duke University 2013 – 2016
 - Standards Board - Investigated and resolved conflicts with individual code of conduct
 - Warden - Developed program to reinforce fraternal values of scholarship, philanthropy, & respect for others
- Duke Training and Fitness, Executive Board 2015 – 2016
- Eagle Scout – Boy Scouts of America 2010

Extra-Curricular Activities

- Duke University Club Volleyball Team 2012 – 2016
- Professional Association of Diving Instructors - Certified Divemaster 2014 – 2015
 - Professional diving certification requiring extensive training on leading groups of divers safely