Lukas José Ferrer

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ABOUT ME

I studied Bio, EE, and AI to see neurons from all three perspectives. My work in deep learning, medical devices, and VR gave me experience bringing research into reality. As a self taught programmer, I currently focus on Natural Language Processing applied towards Information Retrieval.

EDUCATION

M.S. BIOMEDICAL ENG.

USC | Viterbi
August 2017 | Los Angeles, CA
Focus: Electrophysiology, Medical Device Regulations, & Agile Software Development

B.S. BIOMEDICAL ENG.

USC | Viterbi
May 2016 | Los Angeles, CA
Focus: Medical Devices & Physiological Modeling

TOOLS

PYTHON

PyTorch | FastAI
TensorFlow | Keras
TensorBoard
Numpy
SpaCy
Faiss
REST | Requests

SOFTWARE

Linux | Ubuntu | CentOS
Amazon Web Services
Docker
MATLAB
LabVIEW
SolidWorks

ONLINE

LinkedIn | lukas-ferrer
GitHub | Ljferrer
Twitter | Lukas

EXPERIENCE

INFORMATION SCIENCES INSTITUTE | Research Programmer

May 2018 – Present | Marina del Rey, CA

- Improved our existing Neural Machine Translation (NMT) system's performance to be competitive with Google Translate across several languages
- Integrated algorithms from several academic papers focusing on Transformers, a novel deep learning architecture, into ISI's in-house NMT training library
- Competed in SARAL, a multi-institution challenge with researchers across the country to make a functional, cross-lingual information retrieval system within a 10-day period
- Developed an automated ingestion pipeline to pull over 100,000 news articles per day from LexisNexis for ISI's geopolitical forecasting platform, SAGE
- Improved relevant document retrieval (recall@5) by 73%
- Served SAGE's research tool as a Restful API on AWS

RECALL VR | Creator and Team Lead

Aug 2015 – May 2016 | USC GamePipe Lab

- Developed an experimental Virtual Reality tool designed to leverage a student's natural spatial awareness to increase memory and boost retention
- Led 16+ students with skill sets ranging from architecture and animation to computer science and business under an Agile development framework
- Won 1st place at the 2016 Viterbi Senior Design Expo

HEMODIALYSIS CATHETER | Final Project

May 2015 – Aug 2015 | USC MPTX 513

- Wrote a 510(k), simulating the process of obtaining FDA clearance to market
- Familiar with the continuous product life cycle and design controls of medical devices in compliance with the ISO 13485 standard and 21 CFR 820 regulation
- Designed a Class II, implantable hemodialysis catheter that was substantially equivalent to two predicate devices in terms of fabrication, materials, and labeled use, yet novel in its reversible blood-flow-separating tip design
- Modeled an implanted version of the device in SolidWorks and rendered blood flow simulations, showing evidence that the blood-flow-separating tip provided adequate care even if the catheter was hooked up to the hemodialysis machine backwards

SYNTOUCH | Robotics Intern

Feb 2014 – Nov 2014 | Los Angeles, CA

- Fabricated a robotic test fixture to explore applications in manufacturing of SynTouch's new tactile sensor, the NumaTac
- Documented build and buy decisions along the entire design process, from the Bill of Materials to assembly
- Reported weekly progress at the Medical Device Development & Fabrication Lab at USC under the direction of Dr. Gerald E. Loeb, the principal engineer of the first cochlear implant