Lukas José Ferrer

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ABOUT ME

I studied Bio, EE, and AI to see neurons from all three perspectives. My initial work on electrophysiology, medical devices, and VR gave me experience bringing research into reality. As a self taught programmer, I now focus on Deep Learning and NLP applied towards Information Retrieval Systems.

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

LINKS

LinkedIn || lukas-ferrer
GitHub || Ljferrer

EXPERIENCE

INFORMATION SCIENCES INSTITUTE | Research Programmer

May 2018 – Present | Marina del Rey, CA

- SARAL – Using Deep Learning for low resource, Neural Machine Translation
- Reimplemented several academic papers focusing on Transformers
- Improved our existing NMT system's performance to be competitive with or better than Google Translate across several language pairs
- Operationalized our models to fit into the larger SARAL pipeline
  i.e. Audio/Text Database –> ASR –> *NMT* –> IR –> Summarization –> User
- SAGE – Implemented the backend of SAGE's **Research Tool**, an information retrieval tool for our news database
- Set up a host server on AWS and automated an ingestion pipeline that continuously updates the Research Tool with +100,000 news articles per day from LexisNexis
- Demonstrated a meaningful improvement in search quality over previously implemented system

KECK RADIOMICS LAB | Volunteer Researcher

Oct 2016 – Nov 2017 | Los Angeles, CA

- Analyzed spectral and texture features of CT images with a particular focus on boundary conditions for tissue segmentation in a HIPAA compliant setting
- Characterized the statistical variance of images across different CT machines
- Reported results and findings in weekly lab meetings with an interdisciplinary team

RECALL VR | Creator and Team Lead

Aug 2015 – May 2016 | USC GamePipe Lab

- Envisioned and pursued the creation of an experimental, Virtual Reality learning accelerator designed to leverage a student's natural spatial awareness to increase memory retention (sometimes called The Memory Palace Technique)
- 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

- Worked in a team of four to create a complete 510(k), simulating the process of obtaining FDA clearance to market
- Designed a Class II, implantable hemodialysis catheter that was substantially equivalent to two predicate devices in terms of fabrication, materials, and labeled use, while novel with its blood flow separating tip
- Modeled the implanted device in SolidWorks to render blood flow simulations
- Familiar with the continuous product life cycle of medical devices in compliance with ISO 13485 and 21 CFR 821

SYNTOUCH | Robotics Intern

Feb 2014 – Nov 2014 | Los Angeles, CA

- Fabricated a robotic test fixture to explore alternative applications of SynTouch's new tactile sensor, the NumaTac
- Documented the 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