

## EDUCATION

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<b>University of Hawaii</b> <i>Ph.D in Bioengineering;</i>	Honolulu, HI <i>Jan. 2018 – Current</i>
<b>University of Hawaii</b> <i>Master of Science in Computer Science; GPA: 3.85</i>	Honolulu, HI <i>Aug. 2016 – Dec. 2018</i>
<b>University of Oregon</b> <i>Bachelor of Science; GPA: 3.2</i>	Eugene, Oregon <i>Sept. 2010 – June. 2014</i>

## THESIS

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*A Heuristic for Optimizing the Physical Layout and Network Topology of Integrated 3D Multi-chip Systems Under Temperature Constraints*

Adviser: Henri Casanova Ph.D

- Developed a simulation framework to build multi-chip systems and evaluate metrics such as temperature, network topology, and computational power
- Implemented a random greedy heuristic and parallelized it to allow more layout configurations to be evaluated in a tractable amount of time

## PUBLICATIONS

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*Sparse 3-D NoCs with Inductive Coupling*, M. Koibuchi, L. Leong, T. Totoki, H. Matsutani, H. Amana, H. Casanova, in Proc. of the Design Automation Conference (DAC), Las Vegas, Nevada, June 2019.

## EXPERIENCE

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**Graduate Researcher**                      **University of Hawaii Cancer Center**                      *Nov 2018 - Present*  
*Breast Tomosynthesis: Mammography imaging analysis software (Python, Matlab)*

- Developed an algorithm to assess breast cancer risk from 9 mammographic images as oppose to 360 images
- Built a machine learning model to predict breast thickness from non-continuous tomograms

*Interval Breast Cancer Analysis: Deep learning software for early cancer detection (Python, Keras)*

- Developed code to better train our deep learning models to detect under represented cancer classes

**Researcher**                                      **Eyegenix LLC**                                      *Aug 2015 - Nov 2018*  
*Bio-Engineered Cornea (BEC): Class II medical device bio-polymer for transplant*

- Refined cell and tissue assays to better predict in-vivo bio-compatibility of developed bio-polymers
- Data analysis to optimize manufacturing and development of the bio-engineered cornea

**Graduate Researcher**                      **Social Science Research Institute**                      *Jun 2017 - Aug 2017*  
*Hawaii Level of Service Inventory - Revised (LSI-R): Database to track and study prison population in Hawaii (SQL, R)*

- Aggregated data and joined tables to construct Hawaii's, Department of Public Safety's, LSI-R database
- Wrote queries and performed data analysis to expedite the writing of quarterly reports

**Pathology Trainee**                              **Queen's Medical Center**                              *Summer 2011 & Summer 2012*  
*Abstract Publication: "Analysis of KRAS and BRAF mutant colorectal cancers in a multiracial population"*

- Analyzed K-Ras mutation data and found Hawaii to have a unique mutation distribution

*Cancer and Pathology Research:*

- Developed and practiced "wet lab" skills which allowed me to assist in sample processing, testing, and data collection

## PROJECTS

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- **Genetic Approach to Network Topology Optimization of Integrated 3D Multi-chip Systems:** Implemented a genetic algorithm to explore good layout geometries for systems containing many microprocessor chips (Python, C).
- **Parallel Steganographic Encryption:** Developed a program to encrypt data, with AES, and hide it in images in parallel to achieve 4 times the speed up and an added layer of security (Python, C++, threads, OpenCV).