

# TILELI AMIMEUR

tamimeur@gmail.com

[www.tileliamimeur.com](http://www.tileliamimeur.com)

## Summary of Qualifications

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- DNA sequence and expression array data manipulation with Python Pandas
- Neural Network modeling/prediction of protein stability and promoter expression with Keras/Theano/Tensorflow
- Designed and implemented wetlab computer vision applications with OpenCV
- Statistical modeling of transcriptional gene networks using Bayesian inference and Markov Chain Monte Carlo in Python

## Education

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**University of Washington, Seattle, WA**

**Doctorate of Philosophy, Electrical Engineering** (GPA: 3.8), Expected Fall 2017

*Related Coursework: Intro to Data Science, Computer Vision, Artificial Intelligence, Probabilistic Graphical Models, Advanced Synthetic Biology*

**University of Texas, Austin, TX**

**Master of Science, Electrical and Computer Engineering** (GPA: 3.6), May 2010

## Relevant Projects

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### Data-Driven Modeling of Protein Stability and Promoter Strength

2016-Present

- ❖ Trained/Tested a Convolutional Neural Network using promoter sequence data to determine promoter strength. Used simulated annealing to arrive at a synthetic set of designed 'super-promoters'.
- ❖ Trained/Tested a Deep Neural Network using experimental protein stability data and Rosetta metrics (from the Baker lab at UW) to model protein stability. Similarly used non-linear optimization to recommend new highly stable protein structures.

### Beluga: Information-Theoretic Agent for Genetic Circuit Design

2015-Present

- ❖ Implemented a Partially Observable Markov Decision Process (POMDP), decision-theoretic agent to efficiently design optimal gene regulatory circuits under experimental and biological uncertainty.
- ❖ Approached as a non-deterministic search problem where the agent must simultaneously learn about its environment and reach a desired design goal

### Computer Vision-based Wetlab Assistance Tools

2013 – 2015

- ❖ Wrote vision-based equipment object-tracking software using SIFT (scale-invariant feature transform) in OpenCV to track errors in live recordings of wetlab protocols; towards minimizing contamination and process variability in genetic circuit construction

## **Aquarium: Semi Automated Wetlab Environment – Co Inventor**

2012-2015

- ❖ Designed and implemented a formal environment for specifying workflows and managing laboratory operations in an easy-to-share, computer encoded, human and machine interpretable manner (using Ruby/Rails) <http://klavinslab.org/aquarium.html>

## **Industry Experience**

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### **Intel - Pre Silicon Validation - Component Design Engineer**

2010-2012      Validation and design of CPU and SOC power management for the Atom Products Division

### **Bell Labs – Video Research Lab – Software Development Intern**

2009              Modeling in C++ of video traffic, jitter, and packet drops through multicast IPTV

### **Dolby – Digital Cinema Team – Embedded Systems Intern**

2007              User interface design for networked digital cinema players in C++

### **NASA – Cardiology Lab – Software Design Intern**

2006              Design and implementation of EKG analysis software in C

## **Recent Accomplishments**

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**Invited Talk – Paper**, T. Amimeur, E. Klavins. MDP-based Planning for Design of Gene-Repression Circuits. *Proc. of the IJCAI-2016 Workshop on AI in Synthetic Biology*, 2016. (In-Progress)

**Best Poster Award**, Tileli Amimeur, E. Klavins. Automated Experimentally-Driven Design of Genetic Circuits, *International Workshop on BioDesign Automation (IWBD A)*, 2015.

**Co-inventor of Aquarium (Semi-Automated Wetlab Environment)**, UW Seattle, 2015.

## **Previous Publications**

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**Best Paper Award**, *19th International Symposium on Computer Architecture and High Performance Computing*: Elias Mizan, Tileli Amimeur, Margarida Jacome. "Self-Imposed Temporal Redundancy: An Efficient Technique to Enhance the Reliability of Pipelined Functional Units," *IEEE Computer Society Press*, October 2007.

**Best Paper Runner-Up**, *International Embedded Systems Symposium (IESS)*, "Modeling Cache Effects at the Transaction Level," *Analysis, Architectures and Modeling of Embedded Systems*, Ardavan Pedram, David Craven, Tileli Amimeur, Andreas Gerstlauer, Published by Springer, ISBN 978-3-642-04283-6, September 2009.

**Employability Status: US Citizen**