Emily Pillmore

Personal Data

Date of Birth:	California, USA | 28 Feb 1990
Current Location:	Brooklyn, NY
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Work Experience

Current / July 2018 — Haskell Engineer at Kadena , Brooklyn, NY
PLT, Distributed Systems, Formal Verification
Lead maintainer of the Pact smart contract language, a Lisp-like implementation of System F with Hindley-Milner type inference and a formal verification suite. Working on Coq verified denotational semantics of the language (discarded). Senior contributor to Proof-of-Work blockchain (Chainweb), and a permissioned Byzantine Fault-Tolerant blockchain (Kuro).

2016-2018 — Senior Software Developer at Cake Solutions, NYC
Distributed Systems at Scale
Streaming architecture and distributed systems for Disney Streaming (a Cake Solutions client), working on the ESPN livestream and VOD architecture. This role was primarily functional programming in Scala, with Haskell PoC's, serving millions of concurrent users daily. Focus was on the DRM protocols and Ad Services.

2015-2016 — Consultant/Expert Advisor at BCG, NYC
Data analysis, CCAR audit, audit consulting, model validation, reverse model engineering, technical documentation, statistical analysis

2015-2015 — Operations Analyst at *Goldman Sachs*, Salt Lake City
FX confirmations group

Education

May 2014 — Bachelor of Science in Mathematics, **University of Utah**, Salt Lake City
Emphasis on Topology and Geometry | Major: Mathematics
Achievements include: TA for Introduction to Algebraic Topology II (MA5520) ,
participant in student lecture series giving talks on the following:
- The Word distance, Hyperbolic Groups, and the Milnor-Svarc lemma
- Simplicial, Singular, and Cellular Homology
- The Baire Category Theorems
- Geometric Group Theory

Accolades and Extracurriculars

March 2019-Present	Lambda Conf committee member
February 2019-Present	Applied Category Theory (ACT) School Research Group at Oxford
January 2019-Present	Haskell.org committee member
April 2018-Present	Board-member of Functional Conf, Bengaluru

Talks

September 2019 **Scala World**	*Type Arithmetic and the Yoneda Lemma* 90-min talk building a notion of arithmetic in Cartesian Closed Categories with special emphasis on the philosophical perspective of reasoning via the Yoneda Lemma and Leibniz Principles. Talk
June 2019 **LambdaConf**	*Isomorphic Reasoning* A 6-hour workshop building the foundational knowledge to understand "type arithmetic" in Cartesian Closed Categories, with special emphasis on proofs via the Yoneda lemma. Talk
June 2019 **LambdaConf**	*Adjunctions and Free Constructions* A 90-min talk teaching the fundamentals of adjunctions and free constructions in Category Theory. Talk
January 2019 **SBC**	*Formally Verified Smart Interfaces* A 5-minute lightning talk at Stanford Blockchain Conference detailing recent innovations I'd made in formally verifying smart contract interfaces (think Haskell typeclasses with laws!). Video

Patents

November 2018 KA02-004-UT-01US-PRO1 - Formally verified smart contracts (co-author)

Publications

July 2018 **(Preprint)** *Profunctor Optics: a categorical update* (co-author)

Open Source Contributions

Author:	lens-process, microlens-process, nonempty-vector base64, base64-lens
Maintainer:	Pact, Chainweb, strict-tuple
Collaborator:	Lens
In Progress:	hfunctor, sheaves
Previously Maintained:	Scalaz, ZIO

Meetups

Leader:	NY Homotopy Type Theory (HoTT) meetup
Co-organizer:	NY Haskell User Group, NY Category Theory Meetup
Participant:	CUNY Categorical Logic seminar

Languages

English:	Primary
Spanish:	Conversant
French:	Basic Knowledge

Academic Interests

My current academic focus is building towards understanding Homotopy Theory, Higher Category Theory, and Higher Topos Theory.

Other Interests and Activities

Trail Hiking, Music (I am a fairly competent Latin Jazz guitarist), hobbyist electronics engineer (building guitar amplifiers and electronics components for guitar).