Sven Kreiss, PhD

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SUMMARY

- Data Scientist with a focus on Machine Learning and Computer Vision
- Statistical modeling expert; was on the core team that discovered the Higgs Boson at CERN
- Founder of the *NYC Data Breakfast*
- Creator of *pysparkling* and *Databench*, see GitHub: https://github.com/svenkreiss
- Preferred programming languages: Python, C++ and TypeScript/JavaScript
- Languages: English (fluent), German (native), French (basic)
- Grew up in Germany, studied and lived in the UK, Switzerland and the US

EXPERIENCE

Sidewalk Labs, an Alphabet company, New York — April 2016 – present
Senior Data Scientist April 2017 – present, Data Scientist April 2016 – April 2017
Predictive modeling for the transportation coordination platform Flow
Geospatial tools and analyses for Sidewalk's Policy team

Wildcard, New York — Sept 2014 – March 2016
Lead Data Scientist
Developed a machine learning tool for text and media extraction from HTML documents
Created a content recommedation engine with Collaborative Filtering on Spark
Supervised dataset generation by in-house analysts

ElectronX, Germany — July 2007 – Aug 2009
Founder
Designed circuit boards and manufactured electronic devices

EDUCATION

New York University, New York — Sept 2009 – May 2014
Doctor of Philosophy
Thesis: Higgs Boson Discovery and First Property Measurements using the ATLAS Detector
Award: NSF LHC Student Support Award for a one-year-stay at CERN in Geneva, Switzerland

University of Edinburgh, UK — Sept 2005 – Sept 2009
Master of Physics with Honors in Mathematical Physics, Bachelor of Science
Thesis: New Physics at the LHC: Distinguishability of Supersymmetry and Little Higgs models

SOFTWARE

s2sphere, Python implementation of the S2 geometry library. — April 2016
Github: https://github.com/sidewalklabs/s2sphere

pysparkling, a native Python implementation of Spark's RDD interface. — May 2015
Github: https://github.com/svenkreiss/pysparkling

Databench, an interactive realtime data analysis tool. — June 2014
Github: https://github.com/svenkreiss/databench

CONFERENCES

Data for Good Exchange, New York City — Sept 2017
Program committee member.

MLconf, Atlanta — Sept 2015
Conference talk on *Deep ML Architecture at Wildcard*.

Betaworks Studio and Radius Intelligence, New York and San Francisco — May 2015, March 2016
Talk on *Data and the Higgs Boson Discovery*.

University of Cambridge, UK — Jan 2014
Seminar on *Factorizing Theoretical Uncertainties from LHC Higgs Coupling Measurements*.

Statistical and Applied Mathematical Sciences Institute (SAMSI), Durham, NC — July 2013
Talk on *Modeling and Statistical Analysis for Higgs Physics at the Large Hadron Collider* at the workshop on *Knowledge Extraction via Comparison of Complex Computational Models to Massive Data Sets*.

CERN, Switzerland — Jan 2013
Talk on the *H→ZZ*→4l Likelihood in ATLAS* at the workshop on *Likelihoods for the LHC Searches*.

LHC Days 2012, Split, Croatia — Oct 2012
Talk on *Standard Model Higgs Combination and Properties*.

Computing in High Energy and Nuclear Physics (CHEP), New York, NY — May 2012
Talk on *RooStats: Statistical Tools for the LHC*.

MEDIA

The New Yorker Oct 2013
A Nobel Prize Party: Cheese, Bubbles, and a Boson by Betsy Morais

Momentum Campaign, New York University Oct 2013
A one billion dollar fund-raising campaign where I am featured as one of three students.

The New York Times March 2013
Chasing the Higgs by Dennis Overbye.

> "On the night of June 24, the graduate students and postdocs in Atlas were tiptoeing toward the 5−sigma finish line. Among them was Sven Kreiss, a New York University graduate student who got a preliminary glimpse of the answer alone in his office late that night when, as part of a crosscheck, he combined the data from two signatures of the Higgs decay and found the result breached 5−sigma. The next day he sent a plot to his adviser Kyle Cranmer, whose birthday it was, saying he had a present for him."

Science Dec 2012
A Particle Consistent with the Higgs Boson Observed with the ATLAS Detector at the Large Hadron Collider by The ATLAS Collaboration.
I contributed the analysis of signal strength and mass shown in Fig. 12.

SELECTED PUBLICATIONS

As a former member of the ATLAS collaboration, I am a co-author of over 340 published papers which are listed on my author page on inspirehep.net. Below is a list of publications where I made a significant contribution to the paper itself.

K. Cranmer, S. Kreiss, D. Lopez-Val, T. Plehn, Jan 2014, ***Decoupling Theoretical Uncertainties from Measurements of the Higgs Boson***, Phys Rev D91, arXiv:1401.0080 [hep-ph], code on Github at svenkreiss/decouple, supplemental material at http://dx.doi.org/10.6084/m9.figshare.888607.

ATLAS Collaboration, Sept 2013, *Likelihoods for the $H \to \gamma\gamma$, $H \to ZZ^* \to 4l$ and $H \to WW^* \to 4l$ channel in the ($\mu_{ggF+ttH} * B/B_{SM}$, $\mu_{VBF+VH} * B/B_{SM}$) plane for a Higgs boson mass $m_H = 125.5$ GeV*, Datasets on HepData: https://inspirehep.net/record/1241574/data.

ATLAS collaboration, July 2013, *Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC*, **ATLAS writer**, Phys.Lett. B726 (2013) 88-119.

ATLAS collaboration, July 2013, *Evidence for the spin-0 nature of the Higgs boson using ATLAS data*, Phys.Lett. B726 (2013) 120-144.

ATLAS collaboration, March 2013, *Combined coupling measurements of the Higgs-like boson with the ATLAS detector using up to 25 fb^{-1} of proton-proton collision data*, **ATLAS writer**, ATLAS-COM-CONF-2013-035.

ATLAS collaboration, July 2012, ***Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC***, **Responsible for Bayesian cross checks**, Phys.Lett. B716 (2012) 1-29.

ATLAS collaboration, July 2012, *Combined search for the Standard Model Higgs boson in pp collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector*, Phys.Rev. D86 (2012) 032003.

ATLAS collaboration, Feb 2012, *Combined search for the Standard Model Higgs boson using up to 4.9 fb^{-1} of pp collision data at $\sqrt{s} = 7$ TeV with the ATLAS detector at the LHC*, Phys.Lett. B710 (2012) 49-66.

ATLAS collaboration, December 2010, *Measurement of the top quark pair production cross-section with ATLAS in pp collisions at $\sqrt{s} = 7$ TeV*, Eur.Phys.J.C71:1577 (2011).

L. Moneta, K. Belasco, K.S. Cranmer, S. Kreiss, A. Lazzaro, et al, Oct 2012, ***The RooStats Project***, PoS (ACAT2010) 057.

B.C. Allanach et al, Jan 2008, *SUSY Les Houches Accord 2*, CPC 180 (2009) 1.