





# Sven Kreiss

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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
- Organizer of the *NYC Data Breakfast*
- Creator of *pysparkling* and *Databench*, see [GitHub: https://github.com/svenkreiss](https://github.com/svenkreiss)
- Preferred programming languages: Python, C++ and JavaScript
- Languages: English (fluent), German (native), French (basic)

## EXPERIENCE

**Sidewalk Labs, an Alphabet company**, New York April 2016 — present

*Data Scientist*

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 recommendation 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>

## TALKS

**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  $H \rightarrow ZZ^* \rightarrow 4l$  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	<b>The New Yorker</b>	Oct 2013
	<i>A Nobel Prize Party: Cheese, Bubbles, and a Boson</i> by Betsy Morais	
	<b>Momentum Campaign, New York University</b>	Oct 2013
	A one billion dollar fund-raising campaign where I am featured as one of three students.	
	<b>The New York Times</b>	March 2013
	<i>Chasing the Higgs</i> 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.”	
	<b>Science</b>	Dec 2012
	<i>A Particle Consistent with the Higgs Boson Observed with the ATLAS Detector at the Large Hadron Collider</i> by The ATLAS Collaboration.	
	I contributed the analysis of signal strength and mass shown in Fig. 12.	
SELECTED PUBLICATIONS	<i>As a former member of the ATLAS collaboration, I am a co-author of over 340 published papers which are listed on <a href="#">my author page on inspirehep.net</a>. Below is a list of publications where I made a significant contribution to the paper itself.</i>	
	K. Cranmer, S. Kreiss, D. Lopez-Val, T. Plehn, Jan 2014, <b><i>Decoupling Theoretical Uncertainties from Measurements of the Higgs Boson</i></b> , <i>Phys Rev D</i> 91, <a href="#">arXiv:1401.0080 [hep-ph]</a> , <a href="#">code on Github at svenkreiss/decouple</a> , supplemental material at <a href="http://dx.doi.org/10.6084/m9.figshare.888607">http://dx.doi.org/10.6084/m9.figshare.888607</a> .	
	ATLAS Collaboration, Sept 2013, <i>Likelihoods for the <math>H \rightarrow \gamma\gamma</math>, <math>H \rightarrow ZZ^* \rightarrow 4l</math> and <math>H \rightarrow WW^* \rightarrow 4l</math> channel in the <math>(\mu_{ggF+ttH} * B/B_{SM}, \mu_{VBF+VH} * B/B_{SM})</math> plane for a Higgs boson mass <math>m_H = 125.5</math> GeV</i> , Datasets on HepData: <a href="https://inspirehep.net/record/1241574/data">https://inspirehep.net/record/1241574/data</a> .	
	ATLAS collaboration, July 2013, <i>Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC</i> , <b>ATLAS writer</b> , <i>Phys.Lett. B</i> 726 (2013) 88-119.	
	ATLAS collaboration, July 2013, <i>Evidence for the spin-0 nature of the Higgs boson using ATLAS data</i> , <i>Phys.Lett. B</i> 726 (2013) 120-144.	
	ATLAS collaboration, March 2013, <i>Combined coupling measurements of the Higgs-like boson with the ATLAS detector using up to <math>25 \text{ fb}^{-1}</math> of proton-proton collision data</i> , <b>ATLAS writer</b> , ATLAS-COM-CONF-2013-035.	
	ATLAS collaboration, July 2012, <b><i>Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC</i></b> , <b>Responsible for Bayesian cross checks</b> , <i>Phys.Lett. B</i> 716 (2012) 1-29.	
	ATLAS collaboration, July 2012, <i>Combined search for the Standard Model Higgs boson in pp collisions at <math>\sqrt{s} = 7</math> TeV with the ATLAS detector</i> , <i>Phys.Rev. D</i> 86 (2012) 032003.	
	ATLAS collaboration, Feb 2012, <i>Combined search for the Standard Model Higgs boson using up to <math>4.9 \text{ fb}^{-1}</math> of pp collision data at <math>\sqrt{s} = 7</math> TeV with the ATLAS detector at the LHC</i> , <i>Phys.Lett. B</i> 710 (2012) 49-66.	
	ATLAS collaboration, December 2010, <i>Measurement of the top quark pair production cross-section with ATLAS in pp collisions at <math>\sqrt{s} = 7</math> TeV</i> , <i>Eur.Phys.J.C</i> 71:1577 (2011).	
	L. Moneta, K. Belasco, K.S. Cranmer, S. Kreiss, A. Lazzaro, et al, Oct 2012, <b><i>The RooStats Project</i></b> , PoS (ACAT2010) 057.	
	B.C. Allanach et al, Jan 2008, <i>SUSY Les Houches Accord 2</i> , CPC 180 (2009) 1.	