

# Sven Kreiss, PhD

 LinkedIn: [svenkreiss](#),  GitHub: [svenkreiss](#),  Twitter: [@svenkreiss](#),  e-mail: [me@svenkreiss.com](mailto:me@svenkreiss.com)

## 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](https://github.com/svenkreiss)
- Preferred programming environments: Python, C++, TypeScript/ES6/JavaScript, Spark, React
- 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 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>

## 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  $H \rightarrow ZZ^* \rightarrow 4l$  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*.

*A Nobel Prize Party: Cheese, Bubbles, and a Boson* by Betsy Morais

A one billion dollar fund-raising campaign where I am featured as one of three students.

*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.”

*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 D*91, [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  $H \rightarrow \gamma\gamma$ ,  $H \rightarrow ZZ^* \rightarrow 4l$  and  $H \rightarrow WW^* \rightarrow 4l$  channel in the  $(\mu_{ggF+uH} * B/B_{SM}, \mu_{VBF+VH} * B/B_{SM})$  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. B*726 (2013) 88-119.
- ATLAS collaboration, July 2013, *Evidence for the spin-0 nature of the Higgs boson using ATLAS data*, *Phys.Lett. B*726 (2013) 120-144.
- ATLAS collaboration, March 2013, *Combined coupling measurements of the Higgs-like boson with the ATLAS detector using up to  $25 \text{ fb}^{-1}$  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. B*716 (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. D*86 (2012) 032003.
- ATLAS collaboration, Feb 2012, *Combined search for the Standard Model Higgs boson using up to  $4.9 \text{ fb}^{-1}$  of pp collision data at  $\sqrt{s} = 7$  TeV with the ATLAS detector at the LHC*, *Phys.Lett. B*710 (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.C*71:1577 (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.