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Alan WILSON

Education

2011 **Ph.D. Experimental Particle Physics**, *University of Michigan*, Ann Arbor.

2003 **M.S. Mathematics**, *University of Michigan*, Ann Arbor.

1999 **B.S. Computer Engineering**, *University of Washington*, Seattle.

B.S. Mathematical Sciences, *University of Washington*, Seattle, (dual degree).

Proficiencies & technical interests

Almost every day	Occasionally	Dabble in
○ Python, C++, cint, ROOT	○ SQLlite and MySQL	○ D3, nltk, web scraping
○ git, svn, etc.	○ Statistical modeling	○ Mathematica, Matlab, Octave
○ numpy+scipy+matplotlib	○ ML: boosted decision trees	○ Perl, Lisp dialects
○ iPython notebook	○ AWS, shell scripting	○ (Social) network analysis
○ Standard linux tools, VMs	○ HTML, CSS, javascript, jQuery	○ Coding and compression theory
○ Cluster and cloud computing		

Experience

2014–present **Fellow at Insight Data Science**, Mountain View, CA.

- Developed web app 'NewsSpectrum' which recommends a spectrum of alternative news articles on a similar topic.
- Scraped and extracted information from Google News and individual sources with scrapy, BeautifulSoup, and goose.
- Used Python tools nltk and scikit-learn to tokenize, cluster, and rank articles by sophistication.
- Published application using flask, Bootstrap, D3, gunicorn, and supervisor on AWS.

2011–2013 **Post Doctoral Research Fellow**, *ATLAS Experiment*, Geneva, Switzerland.

- Filtered massive datasets ($>$ 1 TB) down to a few important records using world-wide and local batch computing for the discovery of the Higgs boson.
- Built C++ applications (such as for the filtering above) on top of the shared tools of a collaboration of 2000 scientists.
- Developed a framework in Python and ROOT for efficiently specifying, building, and publishing plots to the web.
- Used JSON/YAML+Python to organize and run unit tests on numbers appearing in LaTeX documents.
- Controlled and monitored data acquisition, requiring quick reactions and efficient communication with colleagues.
- Mentored graduate students, and was the primary editor for many documents including published papers.

2005–2010 **Graduate Student Research Assistant**, *ATLAS & DØ Experiments*, Michigan & Illinois.

- Used Monte Carlo simulation and data-driven methods to build statistical models of expected observations.
- Separated signal from background using boosted decision trees.
- Computed 95% confidence intervals for new physical parameters using likelihoods built from data and statistical models of signal and background (with many nuisance parameters quantifying uncertainty).
- Managed Monte Carlo simulation by translating colleagues' informal requests into formal job specifications, testing and submitting the jobs, and monitoring the results; built tools in Python to streamline all of these steps.
- Important contributor to large, public documents describing the experiment's sensitivity to new physics.
- Collaborated with engineers, technicians, and many other physicists on hardware and analysis projects.

2004–2005 **Research Assistant**, *ATLAS Experiment*, Univ. of Michigan, Geneva, Switzerland.

- Validated software by broadly and systematically comparing alternative systems for unexpected discrepancies, found and reported on important bugs.
- Lead a team of five students to complete assembly and testing of large detector components.

1999–2004 **Misc. Teaching**.

- Univ. of Washington CSE Dept.: assisted with Discrete Math, Computer Graphics, and Digital Design.
- Univ. of Michigan Math Dept.: taught Precalculus, Calculus I and Calculus II, and assisted with Differential Equations.