

Andy Twigg

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I'm a computer scientist with expertise in data processing and machine learning. I currently work on ML and large-scale data processing at Lacework, a cloud security company. I was founder/CTO of 2 acquired startups (Acunu, C9), have a PhD in graph algorithms from Cambridge, and was a Fellow in Computer Science at Oxford.

Experience

2020-present: Distinguished engineer, Lacework

Lacework is a cloud security company. I led the core "[polygraph](#)" technology – large-scale data processing pipelines and training inductive GNNs and outlier detection models across billions of messages per hour from agent and cloud data logs. Raised ~\$1.8B, acquired by Fortinet.

2018-2020: EIR (entrepreneur in residence), Milliways Ventures

Exploring ideas around deep RL. [One project](#) was to train a NN to exploit stationary market microstructure using market and limit orders. I collected several TBs of L3 data from a large crypto exchange and built an event-driven simulator that allows better queue length estimation (eg due to cancellations). Also supervised Stanford CS246 students who worked on it as coursework.

2014-2017: CTO, C9 (acquired)

We built one of the first systems to [apply ML to improve sales efficiency](#) via bottom-up forecasting, etc. C9 was [acquired by insidesales.com](#) in 2015, where I was Chief Scientist until 2017.

2013: Founder, Featurestream.io

I built a [streaming random forest](#) on spark streaming and experimented with offering it via an API. Code: <https://github.com/featurestream/>

2009-13: Cofounder, CTO, Acunu (acquired)

We built a streaming analytics system based on Cassandra, sketching algorithms, and [Stratified B-trees](#), which are a fully-versioned LSM/fractal tree (see [here](#), [here](#)). We started the London Big Data meetup. Acquired.

2008-13: Fellow in Computer Science, St Johns College, University of Oxford

Academic post (elected by open competition); took a sabattical to found Acunu.

2006-7: Microsoft Research (Cambridge) and Technicolor Research (Paris)

Developed [algorithms for P2P streaming](#) problems with optimal throughput/latency tradeoffs.

Education

2006: PhD Computer Science, Cambridge University (King's College)

Thesis: [Approximate graph routing with failures](#). Nominated for BCS Best Dissertation Award.

1999-2002: BSc Computer Science, Warwick University (top 1st)

Teaching

I have taught various courses at Oxford & Cambridge including Randomized Algorithms, Data Structures and Algorithms, Probability.

Interests

I enjoy DIY, drumming, golf. I rowed for Cambridge Lightweight and King's College men's 1st VIII

Selected Publications

[*Persistent Cache-oblivious Streaming Indexes*](#), arxiv, abs/1707.08186, 2017

[*Locality-preserving allocations problems and coloured bin packing*](#) with E Xavier., J. Theoretical CS, 2015

[*Stratified B-trees and versioned dictionaries*](#). Twigg et al, HotStorage 2011

[*Constrained-path labellings on graphs of bounded clique-width*](#), with B Courcelle, *Theory Comput. Syst.*, 2010

[*Epidemic live streaming: optimal performance trade-offs*](#), Bonald et al, *SIGMETRICS*, 2008.

[*Worst-case time decremental connectivity and k-edge witness problems*](#). ArXiv,abs/0810.5477, 2008

[*Connectivity checking in 3-connected planar graphs with obstacles*](#). Courcelle et al., *Notes in Disc Math*, 2008

[*Rate-optimal schemes for peer-to-peer live streaming*](#) Massoulie, Twigg., *J. Perf Eval* , 65(11-12):804–822, 2008

[*Randomized decentralized broadcasting algorithms*](#) with Massoulie et al, *INFOCOM*, pages 1073–1081, 2007

[*Forbidden-set labelling on graphs*](#). With Courcelle et al. *PODC (LOCALITY)*, 2007

[*Compact forbidden-set routing*](#). Bruno Courcelle and Andrew Twigg. *STACS* 2007.

[*The complexity of fixed point models of trust in distributed networks*](#). with K Krukow, *J Theoretical CS*, 2007

[*Compact forbidden-set routing \(PhD Thesis\)*](#). Technical report UCAM-CL-TR-678, 2006

[*Provably optimal decentralized broadcasting algorithms*](#). With Massoulie et al, *MSR-TR*- 2006-105