



Barnaby James
Principal Software Engineer @ X Inc

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Skills

- Track-record of innovation
 - [36 issued patents](#) in applied machine learning to solve real world problems
 - Bootstrap new products / product areas starting with small teams
 - Rapid prototyping with hardware / computer vision / ML systems from science project to contract manufacturer
- Team management
 - Early stage to 40 person org
 - Set technical strategy for org-scale projects
 - Building teams from scratch with intention
- Applied Machine Learning Experience
 - Underwater robotics (X / Tidal)
 - Applied Computer vision techniques (X / Tidal)
 - Object detection and tracking
 - Pose estimation
 - Deep metric learning
 - Stereogrammetry
 - Experimental design, large scale data collection and labelling for machine learning projects (X / Tidal / Google Assistant)
 - Natural language understanding (Google Assistant / Actions on Google / Voice Search)
 - Voice Recognition (Google Assistant)
 - Optical Character Recognition (Nuance)
 - Ranking photos by quality and topicality (Google Search)
 - Monte Carlo Simulation (X / Tidal)
- Experience building scalable indexing pipelines with MapReduce / Flume
- Extensive production oncall experience for large scale distributed services
- Proficient Languages – C++, Java, Python, Go, JavaScript
- Creating Developer Platforms:
 - Founded [Actions on Google](#)
 - Founded [Assistant Home Automation API](#) projects

Work Experience

X (formerly Google X) - Principal Software Engineer

April 2017 – present

- Applying machine learning and computer vision to solve real world problems
- Founder / CTO - [Tidal X Project](#) for Ocean Health
 - Underwater Machine vision
 - Hardware / Software systems for remote computer vision
 - Experiment design, data collection and labelling
- Emeritus Tech Lead Manager for X Early Pipeline
 - Rapid Prototyping hardware / computer vision / ML systems
 - Early stage product development (e.g. [Project Delta](#))
- Citizenship
 - 300+ interviews / Promotion committee for SWE / Robotacist / Directors
 - Due diligence / consulting for acquisitions

Google - Senior Staff Software Engineer / Tech Lead Manager

September 2007 – April 2017 (9.5 years)

- Tech Lead Manager - Managing an org of ~40 engineers
- [Google Assistant](#) - natural language voice assistant
 - Founder / TLM Assistant 3P Developer Platform ([Actions on Google](#))
 - Founder / TLM [Smart Home](#) / [IFTTT Integration](#)
 - TLM for Assistant New Device Integrations / Android Auto Voice
 - 3P Integrations ([Messaging](#), OpenTable, Nest, Uber, [Android APIs](#))
 - Android [Voice Interaction API](#) ([video](#), [talk at Ubiquity conference](#))
 - [In App Voice Search](#)
- Google Travel:
 - Photo and attraction ranking for [Google Destinations](#), Google Now and Search.
- [Google Workspace](#)
 - Authorization and Access control infrastructure for YouTube, Google+, Google Apps sharing
 - Tech lead Google Sites
 - Google For Work / Google Calendar / Google Gadgets

- Citizenship
 - Port of [Google Overlapping Experiments Framework](#) to Java
 - Hiring committee member / 400+ interviews / Promotion committee
 - Operations experience running large scale production services (oncall, SRE Handover)
 - Due diligence / consulting for acquisitions

Adobe Systems - Senior Computer Scientist / Tech Lead

September 2001 - September 2007 (6 years)

- Adobe AIR 1.0 - Lead for networking / notifications / multi-monitor support (Top 10 Emerging Technologies of 2008 / MIT Technology Review)
- Tech lead for Acrobat Collaboration
 - Shared Review - collaborative document review workflow using simple network file sharing
 - Networking support (SOAP, WSDL, RSS + ATOM, REST, ZeroConf, P2P)

CoVia Technologies / Principal Engineer

April 2000 – September 2001

- Intranet workspaces built in C++ / OODBMS
- Batch scheduling / billing system

Nuance (acquired Caere) / Staff Software Engineer

July 1996 – April 2000

- Optical Character Recognition (OCR) and Document Understanding - Core Technologies group for Omnipage Pro 8.0 and 9.0
- Tech lead for Omnipage Pro 10.0 OCR Engine

IBM (acquired Cognos) / Software Engineer + Intern

May 1991 – September 1995 (4 years 5 months)

- Unified SQL dialect across heterogeneous RDBMS systems (Oracle, Sybase, Teradata)

Education

- University of Toronto, BSc – Honours Physics
- Specialization in Quantum Field Theory

Issued Patents

- Selection of computational agent for task performance / United States 10,853,747
- Securely executing voice actions using contextual signals to perform authentication / United States 10,770,093
- Trigger phrase for voice actions of software applications / United States 10,741,183
- Generating and transmitting invocation request to appropriate third-party agent / United States 10,714,086
- Processing voice commands based on device topology / United States 10,699,707
- Voice to text conversion based on third-party agent content / United States 10,600,418
- Fish biomass, shape, and size determination / United States 10,599,922
- Fish measurement station keeping / United States 10,534,967
- Selecting photographs for a destination or point of interest / United States 10,510,129
- Task initiation using sensor dependent context long-tail voice commands / United States 10,490,190
- Task initiation using long-tail voice commands by weighting strength of association of the tasks and their respective commands based on user feedback / United States 10,297,254
- Generating and transmitting invocation request to appropriate third-party agent / United States 10,224,031
- Securely executing voice actions with speaker identification and authentication input types / United States 10,127,926
- Voice action biasing system / United States 10,089,982
- Providing voice action discoverability example for trigger term / United States 10,049,670
- Developer voice actions system / United States 9,922,648
- Selecting photographs for a destination or point of interest / United States 9,805,428
- Voice action biasing system / United States 9,691,384

- Document-authorized access to a shared workspace Various embodiments / United States 9,491,150
- Selecting photographs for a destination or point of interest / United States 9,483,495
- Selecting photographs for a destination / United States 9,076,079
- Content review with proxy comment management / United States 9,130,905
- Document-authorized access to a shared workspace / United States 9,166,954
- Method and apparatus for customizing presentation of notification lists / United States 8,244,796
- Searching a database of selected and associated resources / United States 8,190,602
- Distributed computing document recognition and processing / United States 6,742,161
- Developer voice actions system / Europe 3424045
- Facilitating creation and playback of user-recorded audio / United Kingdom 2559643
- Voice to text conversion based on third-party agent content / United Kingdom 2557400
- Processing voice commands based on device topology / United Kingdom 2567067
- Facilitating creation and playback of user-recorded audio / Europe 3504704
- Voice action biasing system / Europe 3479374
- Securely executing voice actions using contextual signals / Europe 3469587
- Voice action discoverability system / United Kingdom 2551232
- Processing voice commands based on device topology / United Kingdom 2557404

Citizenship

- United States / Canada / United Kingdom