Visa Research

So what exactly does a financial technology research lab do and why?

Ron Perez, VP and Head of Security & Blockchain Research
Visa is a Different Type of Tech Company

WHO WE ARE

• Global payments technology company
• Transaction-processing network that connects cardholders, merchants and financial institutions

WHO WE ARE NOT

• Credit card issuer
• Lender
• Exposed to consumer credit risk
Visa is the Largest Payment Network

- 3 billion CARDS
- 148 billion TRANSACTIONS
- $10 trillion TOTAL VOLUME
- 17 thousand FINANCIAL INSTITUTIONS
- 44 million MERCHANT OUTLETS

**U.S. CARDS**
- 685M
- 337M
- 53M

**U.S. SPEND**
- 2.3T
- 1.1T
- 0.6T
Global payments technology company that connects consumers, businesses, banks & governments enabling them to use digital currency and leave cash and checks behind.
Nearly 60 Years of Continuous Innovation

1958: A Cashless Revolution
1970: Cashless Incorporates
1973: The Power of Electricity
1974: Going Global
1975: Debit Debut
1976: The Birth of Visa
1979: Travel with Convenience & Confidence
1983: Cash Around the Clock
1986: Everywhere You Want to Be
1988: An Olympic Year
1989: Link to the Future
1993: Fighting Fraud
1988: What's Your Currency?
Nearly 60 Years of Continuous Innovation

1995 - Debit Goes Mainstream
America’s Most Popular Sport

1996 - Financial Knowledge for the Masses

1997 - Twelve Months, Twelve Zeroes

2000 - Easy as ABC A Billion Cards

2004 - Debit Card Volume Surpasses Credit
Advanced Authorization

2005 - New Directions, New Look

2006 - Success Quadrupled

2007 - Going Mobile Incorporating Change

2008 - A Very Public Statement
The Mobile Revolution

2009 - More People Go with Visa
Visa Launches Currency of Progress

2010 - A Beautiful Game

2014 - Apple Pay
Visa Checkout Launches

2016 - Rio Olympic Games

Visa Checkout Launches

Apple Pay

Visa

2014 - Apple Pay

Visa Checkout Launches

2016 - Rio Olympic Games

Visa Checkout Launches

Apple Pay

Visa
### Visa’s Payment Products and Channels

<table>
<thead>
<tr>
<th>PAY LATER</th>
<th>PAY NOW</th>
<th>PAY BEFORE</th>
</tr>
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<tbody>
<tr>
<td><strong>Credit</strong> products</td>
<td><strong>Debit</strong> products</td>
<td><strong>Prepaid</strong> products</td>
</tr>
<tr>
<td>draw funds from a <strong>credit</strong> line</td>
<td>draw funds from a <strong>current account</strong></td>
<td>draw funds from a <strong>pre-funded card</strong> account</td>
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#### Channels

- **Plastic**
- **Online**
- **Mobile**
The Innovation Continues...

<table>
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<tr>
<th>Mobile</th>
<th>Tokenization</th>
<th>Opening up networks to innovation</th>
</tr>
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<tbody>
<tr>
<td>Rethinking how electronic payments can provide greater <strong>security</strong>, <strong>immediacy</strong> and <strong>value</strong> to consumer and merchants</td>
<td>Removing friction from checkout experience and <strong>improving the security and convenience</strong> of digital payments</td>
<td>Opening the edge of our network and exposing it to <strong>millions of engineers globally</strong></td>
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Introducing Visa Research
Visa Research – Overview

• Almost 2 years old

• Chartered with a focus on the scientific foundations of existing, emerging, and future commerce related technologies across broad time horizons

• Mission Statement:

  • Conduct applied research on the most challenging problems in the payment industry and provide technical thought leadership to guide the company's future

• Rapidly growing team

  • Reach 24 fulltime staff this June: 19 Research Scientists, 3 Research Engineers, +Ops/Support
  • Robust intern program: 16 PhD students this summer (+1 spring intern)
Visa Research – Three Focus Areas

Data Analytics

Security

Future of Commerce
Visa Research – Data Analytics
Initial Research Focus Areas

Objective:
Decode the Language of Transactions
Visa Research – Security
Initial Research Focus Areas

• Advances in Cryptography
  • Leverage and advance the use of emerging cryptographic techniques such as Secure Multi-Party Computation, Search on Symmetric Encryption, Homomorphic Encryption, Obfuscation, and Post-Quantum Cryptography

• Secure Computing
  • Hardware and software foundations enabling near-term end-to-end secure computation, data and workload management across the distributed enterprise, between ecosystem partners, and to/from the sea of endpoints and devices

Objective: Balance advancements in cryptography and secure systems for strongest and most efficient context appropriate data acquisition, classification, protection and analysis across the computing spectrum
Visa Research – Future of Commerce
Blockchain – Initial Research Focus Areas

- Performance & Scalability
- Privacy with Auditability
- Identity & Authentication
Industry [Research] Environments

• Your work and your research
• Your colleagues and collaborators
• How progress and achievement are measured
• Your career growth and options
• Culture: lab and company
Welcome!
To Palo Alto
Thank you!