ACCELERATING DATA ANALYTICS

Xelera Technologies

Felix Winterstein
• Xelera Technologies
• Use case 1 – intelligent voice recognition
• Use case 2 – predictive analytics acceleration
• Xelera’s product portfolio
CLOUD
• Big Data processing
• Data warehousing
• …

ON-PREM / NEAR-EDGE
• Private hosting
• Real-time
• Latency-critical

LAN/WAN

Edge
• Xelera Technologies
• **Use case 1 – intelligent voice recognition**
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Near-Edge Acceleration Services

Compute server (near-edge)

Low latency connection

Edge device (limited compute capabilities)
Speech segmentation → Feature extraction (Deep Learning) → Classification / clustering

60 ms e2e latency constraint

text-independent speaker identification
• Xelera Technologies
• Use case 1 – intelligent voice recognition
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• Xelera’s product portfolio
• Popular Big Data software framework
• Open source; strong commercial use
  • Business intelligence
  • Data warehousing
  • Real-time / streaming apps
  • Recommender systems
  • Log processing
  • Fraud detection
• In-memory, distributed
• Combines real-time capabilities and advanced analytics
Use case: Real-time predictive analytics

- Target: use existing data to make predictions about a system
- Algorithm: Spark MLLib’s Random Forest
- Applied in:
  - Banking / Finance
  - Healthcare
  - Ecommerce
- High-frequency model updates as BI applications move to real-time
Vote

Tree 1

Tree 2

kernel 0

kernel 1

shell
R A N D O M F O R E S T U S E C A S E

Processing time [minutes]

- 67x speed-up
- 202.4 min
- 57x speed-up
- 93.7 min
- 41x speed-up
- 38.5 min
- 41x speed-up
- 0.9 min
- 1.6 min
- 2.9 min

Work load size

- Classical
- FPGA-accelerated
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Platform x Functions x Integration
End user application

Integration hooks
- Proprietary SW interfaces
- Java/C++
- Keras
- MySQL

Plugins
- Random Forest
- XG Boost
- Clustering
- SVM
- Regression
- Deep Learning
- Fuzzy Search
- Compression
- Network protocols

Platforms
- AWS
- Open Telekom Cloud
- Nimbix
- On-premise
WWW.XELERA.IO
• Performance acceleration for all business critical processes (value contributors)
• Multiple processor architecture → Application- and load-based switching
• Seamless integration into business processes, analytics, networks, storage and data bases with
  • Cockpit and dashboards for control center, online monitoring and reports
  • Significant energy savings – lower TCO
  • Smooth transition – no disruption
# Product Family

**A powerful solution portfolio aligned with the market maturity and expectations**

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<th><strong>Predict</strong></th>
<th><strong>Suite</strong></th>
<th><strong>Plugins</strong></th>
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<tbody>
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<td>Pre-purchase assessment</td>
<td>Seamless stack integration</td>
<td>Plug-and-Play Acceleration</td>
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<tr>
<td>Assess performance gains, costs and savings when migrating business applications to FPGAs</td>
<td>Connect business applications with FPGA technology (baseline infrastructure)</td>
<td>Accelerate complex data analytics applications</td>
<td>Accelerate performance-critical operations in databases</td>
<td>Handle large-scale IoT infrastructure with FPGAs at the network edge</td>
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