Application: 4828

Pioneering Distributed SQL Engine Revolutionizes Real-Time Data Analytics and Streaming

Page: General Information

Provide information about the company to be considered for the award. If you will be nominating an individual, specify the nominee’s employer.

Name of Organization/Company

Satyam Shekhar

Additional Contacts

I do not wish to list additional contacts

Page: Entry Information

Entry Title

Pioneering Distributed SQL Engine Revolutionizes Real-Time Data Analytics and Streaming

Category

Q04. Technology Breakthrough of the Year - Information Technology

Technology Breakthrough of the Year Submission Format

Written Answers

a. Briefly describe the organization that achieved the nominated technology breakthrough: its history and past performance (up to 200 words). Required

NetSpring Inc., co-founded by Satyam Shekhar, developed a groundbreaking cloud-native distributed SQL engine called Flux. As Co-Founder and Head of Engineering, Shekhar played a pivotal role in building the company's software engineering team and designing foundational distributed systems that power NetSpring's AI-driven warehouse-native product analytics and semantic modeling systems.

Flux, the core of NetSpring's technology stack, efficiently runs batch and streaming SQL queries over rapidly changing datasets. It combines the throughput and scale of modern data warehouses with the incremental compute capability of streaming platforms and efficient event-sequence computations from time-series databases.

Under Shekhar's leadership, NetSpring built a team of over 20 engineers from top-tier institutions and tech giants. The company's innovative approach attracted customers like DCP, Ergatta, and Patreon, generating over $500,000 in revenue from Flux alone.

Shekhar's contributions led to two pending patents related to low-latency buffer storage and data management optimizations. NetSpring's technology has garnered media attention, including coverage of their funding and customer collaborations. The company has also presented its work at industry conferences, demonstrating its growing influence in the field of data analytics and streaming SQL technology.

b. Outline the nominated technology breakthrough. Be sure to describe it in terms that someone with limited knowledge of the technology can understand and appreciate (up to 250 words). Required

Innovative Technological Leadership
Satyam Shekhar, Co-Founder and Head of Engineering at NetSpring Inc., led the development of Flux, a groundbreaking cloud-native distributed SQL engine.

Revolutionary SQL Engine
Flux combines data warehouse throughput with streaming platforms' incremental compute, running efficient batch and streaming SQL queries on dynamic datasets. It ensures low-latency monitoring and complex analytics using fault-tolerant distributed data flows, guaranteeing high availability and seamless processing.

Key Technical Achievements
Shekhar designed core architecture components, including query optimizer, stateful relational operators, and checkpointing mechanisms. He developed algorithms for efficient distribution of incremental operators. Flux implements over 95% of the SQL standard, including multi-level joins and nested sub-queries. Its code-generation capabilities optimize performance using LLVM compiler infrastructure, generating custom C++ code for each query to run natively on hardware. This enables processing billions of rows in seconds, enhanced by hardware features like vectorization and SIMD instructions.

Team Building and Leadership
Shekhar expanded NetSpring's engineering team to over 20 professionals from top institutions and companies, fostering innovation through code reviews and training, emphasizing technical excellence and collaborative problem-solving.

Impactful Industry Contributions
His work led to two pending patents for low-latency data management and query processing optimizations, highlighting Flux's innovative approach to large-scale data analytics.
Market Recognition

Flux attracted notable customers like DCP, Ergatta, and Patreon, generating over $500,000 in revenue. This success demonstrates its real-world value. Shekhar's contributions represent a major technological breakthrough, combining innovative design with commercial success, positioning NetSpring at forefront of database technology. He presented his work at prestigious Hydra Conference

c. Explain why the technology breakthrough you have highlighted is unique or significant (up to 250 words). Required

Satyam Shekhar's achievements as Co-Founder and Head of Engineering at NetSpring Inc. are unique and significant in database technology and distributed systems.

Developing Flux, Shekhar advanced SQL engine technology by combining data warehouse throughput with streaming platforms' incremental compute, efficiently handling batch and streaming SQL queries on dynamic datasets and addressing a critical market gap.

Key Innovations:

* Streaming Operators: Flux implements over 95% of the SQL standard, including advanced features like multi-level joins and nested sub-queries, along with extensions for streaming SQL.

* Fault-Tolerant Architecture: Design as fault-tolerant distributed data flows ensures high availability and resilience.

* Performance: Flux employed code generation and LLVM compiler infrastructure for superior query performance.

* Elastic scaling: Decoupled tiered storage and on-demand compute allow independent scaling of both resources. This architecture enables elastic scaling of compute and storage based on utilization and usage

Industry Impact:

Shekhar's work has resulted in two pending patents, demonstrating Flux's innovative nature. The technology has generated over $500,000 in revenue and attracted notable customers, indicating strong market validation.
Compared to other executives, Shekhar's achievements stand out due to Flux's comprehensive nature. While many focus on either batch processing or streaming, Shekhar has integrated both paradigms into a single, efficient system. His leadership of a team of over 20 professionals and ability to translate innovative ideas into commercially viable products distinguishes him as technical leader in the industry.

Shekhar's work on Flux represents a significant technological breakthrough, combining innovative design with commercial success and positioning NetSpring at the forefront of database technology.

d. Reference any attachments of supporting materials throughout this nomination and how they provide evidence of the claims you have made in this nomination (up to 250 words). Optional

Satyam Shekhar, Co-Founder and Head of Engineering at NetSpring, designed Flux, a revolutionary cloud-native distributed SQL engine. Flux excels in running batch and streaming SQL queries over rapidly changing datasets, integrating elements from modern data warehouses, streaming platforms like Flink and Spark, and time-series databases for high-throughput streaming workloads with low-latency monitoring and alerting.

Media:
Hydra Conference Talk: Satyam's talk, available on YouTube, outlines Flux's capabilities and innovative data processing approach, showcasing its real-time analytics impact.
BusinessWire Article: The BusinessWire announcement on NetSpring's Series A funding underscores Flux's role in driving growth, highlighting its unique combination of batch and streaming SQL capabilities.
Martech360 Article: The collaboration with DCP Midstream demonstrates Flux's real-world effectiveness in managing high-throughput data streams, providing valuable insights through real-time analytics.

Innovative Design: Both the Hydra Conference talk and the BusinessWire article emphasize Flux's architecture, integrating batch and streaming data processing. This corroborates Satyam's development of versatile SQL engine for modern data analytics.

Real-World Impact: The Martech360 article on DCP Midstream collaboration confirms Flux's practical impact, supporting Satyam's claims of its high throughput and low latency capabilities.

Technological Advancements: The media content highlights Flux's advanced features, such as fault-tolerant distributed data flows, decoupled storage and compute, and exactly-once semantics, reflecting Satyam's contributions.

Satyam Shekhar's Flux surpasses media benchmarks in innovation, real-world impact, and technological advancements. Supported by provided media references, this clearly demonstrates the excellence and merit of his work, making him strong candidate for the Technology Breakthrough of the Year award in the Information Technology category.

Webpage Link

https://www.youtube.com/watch?v=-mGtLsEif9U&ab_channel=Hydra (https://www.youtube.com/watch?v=-mGtLsEif9U&ab_channel=Hydra)

Would you like to add an additional webpage link?

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Webpage Link 2

https://docs.google.com/presentation/d/1BpY-P4kFCvDhS1TZ4xQfZs-Po8DovrGRqaJAb3YYFtc/edit#slide=id.g126ed5583ac_0_0 (https://docs.google.com/presentation/d/1BpY-P4kFCvDhS1TZ4xQfZs-Po8DovrGRqaJAb3YYFtc/edit#slide=id.g126ed5583ac_0_0)

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Webpage Link 3

https://www.businesswire.com/news/home/20211207005007/en/NetSpring.io-Raises-13M-Series-A-to-Usher-in-the-Next-Generation-of-Enterprise-Data-Intelligence (https://www.businesswire.com/news/home/20211207005007/en/NetSpring.io-Raises-13M-Series-A-to-Usher-in-the-Next-Generation-of-Enterprise-Data-Intelligence)

Would you like to add an additional webpage link?

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Web Page Link 4

https://www.netspring.io/resources/#case-studies (https://www.netspring.io/resources/#case-studies)

Would you like to add an additional webpage link?

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Web Page Link 5

https://martech360.com/analytics/netspring-announces-customer-go-live-and-collaboration-with-dcp-midstream/ (https://martech360.com/analytics/netspring-announces-customer-go-live-and-collaboration-with-dcp-midstream/)

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https://www.youtube.com/watch?v=-mGtLsEif9U (https://www.youtube.com/watch?v=-mGtLsEif9U)

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Supporting Document

No File Uploaded

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Supporting Document 2

Download File (https://stevies-tech.secure-platform.com/file/67500/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjo2NzUwMCwiYWxsb3dOb3RTaWduZWRVcmwiOiJGYWxzZSIsImlnbm9
satyamshekhar.pdf)

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