SCALABLE HIGH PERFORMANCE STREAMING PROCESSING APPLICATION INSTRUMENTATION FRAMEWORK VIA IMPROVING DYNAMIC CONCURRENCY.

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DECLARATION

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ABSTRACT

The world has already moved to a highly technological stage and internet-based services plays a vital part of day to day life. Performance of those internet based services is a key factor of quality of the service and developers are forced to develop the best possible performant system. Usually gaining the best possible performance is hard due to low visibility and flexibility of the system in performance improvement phase.

This research is focusing on developing the framework ‘concor: A framework for high performance streaming applications, instrumentation in-built’ by combining the pre-placing instrumentation probes and data flow based architectures. The framework provides an API to form data flows, while providing in-built performance monitoring capabilities. Furthermore, the possibility of implementing a dynamic thread reconfiguration mechanism is also researched and included in the framework. Dynamic thread reconfiguration mechanism is used in simplifying the bottleneck isolation. Apart from this, dynamic thread configuration mechanism effectively lifts the initial concurrency design overhead from the developers and provides a new dimension of runtime performance tuning.

Keywords: Instrumentation, Concurrency framework, Dynamic concurrency, Runtime performance tuning, dynamically assigned thread pools. Bottleneck identification, data-flow architecture, event streaming.

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LIST OF ABBREVIATIONS

Abbreviation	**Description**
API	Application programming Interface
TPS	Transactions per Second
CPU	Central Processing Unit
IO	Input/Output
GC	Garbage Collection
JVM	Java Virtual Machine
JMC	Java Mission Control
SEDA	Stage Event Driven Architecture
GUI	Graphical User Interface
PoC	Proof of Concept
DI	Dependency Injection
UI	User Interface
MO	Mobile Originated
AT	Application Terminated
DB	Database
async.	Asynchronous
JMX	Java Management Extensions
HTTP	Hypertext Transfer Protocol
JSON	Javascript Object Notation
USSD	Unstructured Supplementary Service Data
NDC	Nested Diagnostic Context
DB	Gigabyte
CEO	Chief Executive Officer