Spark API Zoo

An Overview

Hi, I'm Casey Stella!

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RDDs are like C: maximum control with maximum opportunity to shoot yourself in the foot.

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The attempt behind DataFrames is provides most of the flexibility of RDDs but hides some of the complexity.

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  - You really, really want type-safety

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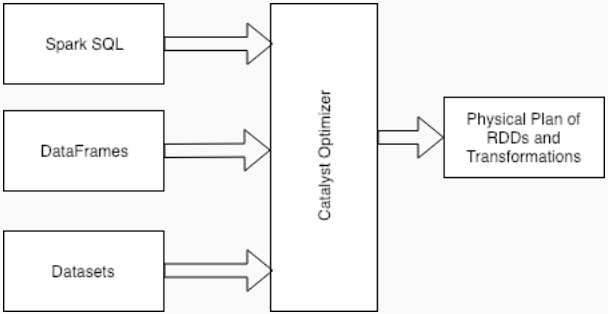
API Relationship



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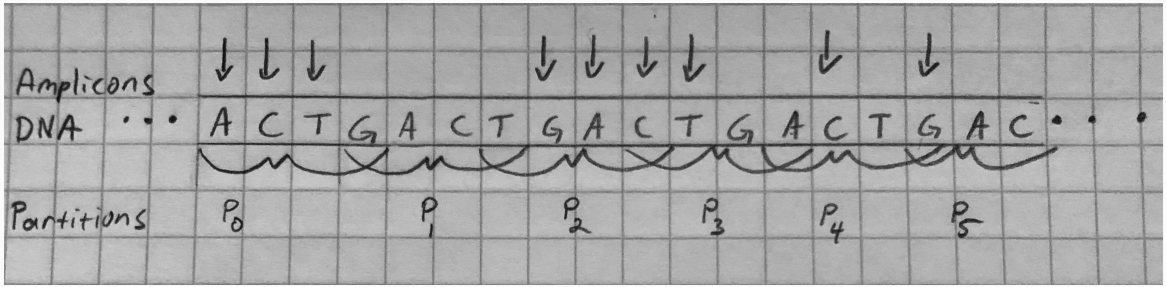
Key takeaway: Catalyst is a level of indirection that the community to centralize optimization work that will work across the logical APIs

Example: Off-Target Amplicon Detection

Determining off-target amplicon matches are important parts of designing custom gene sequencing.

- Compute amplicon matches
- Partition with overlap via a simple k length strategy
- Determine which amplicon pairs are "valid"



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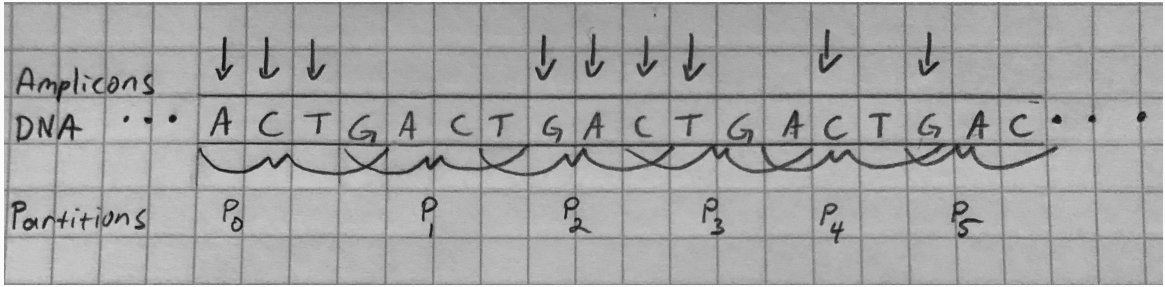
Problems

- We're in a situation where we need to do a computationally complex operation with large constant per partition.
- Lots of mostly empty partitions!



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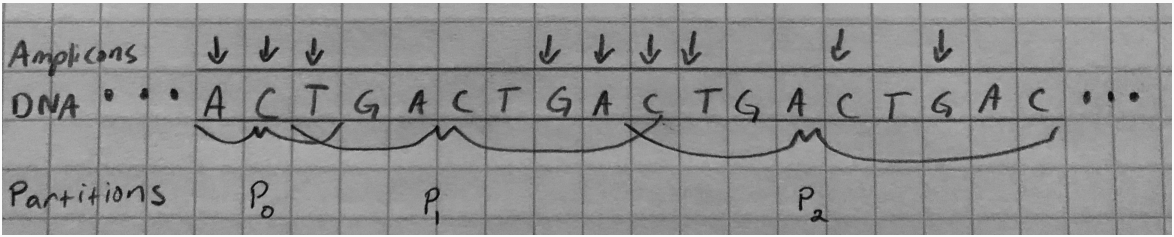
Percentile-based Partitioning

- Compute amplicon matches
- Determine partition splits $\ni$ each partition contains an equal percent of matches
- Determine which amplicon pairs are "valid" with parallelism unit as the partition



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  - It may be a winning strategy to implement common custom UDFs in a JVM language and use them.

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- Don't be afraid to move up and down the stack of complexity as needed.
- Using non-JVM languages requires care and understanding of data serialization costs.
  - It may be a winning strategy to implement common custom UDFs in a JVM language and use them.
- Mind memory and monitor garbage collection.

Questions

Thanks for your attention! Questions?

- This talk available on my github presentation page.[1]
- Find me at http://caseystella.com
- Twitter handle: @casey_stella

[1] http://github.com/cestella/presentations/