SAGE - Gameful Intelligent Tutoring

Programming Behavior Detection 1.1

Final Presentation

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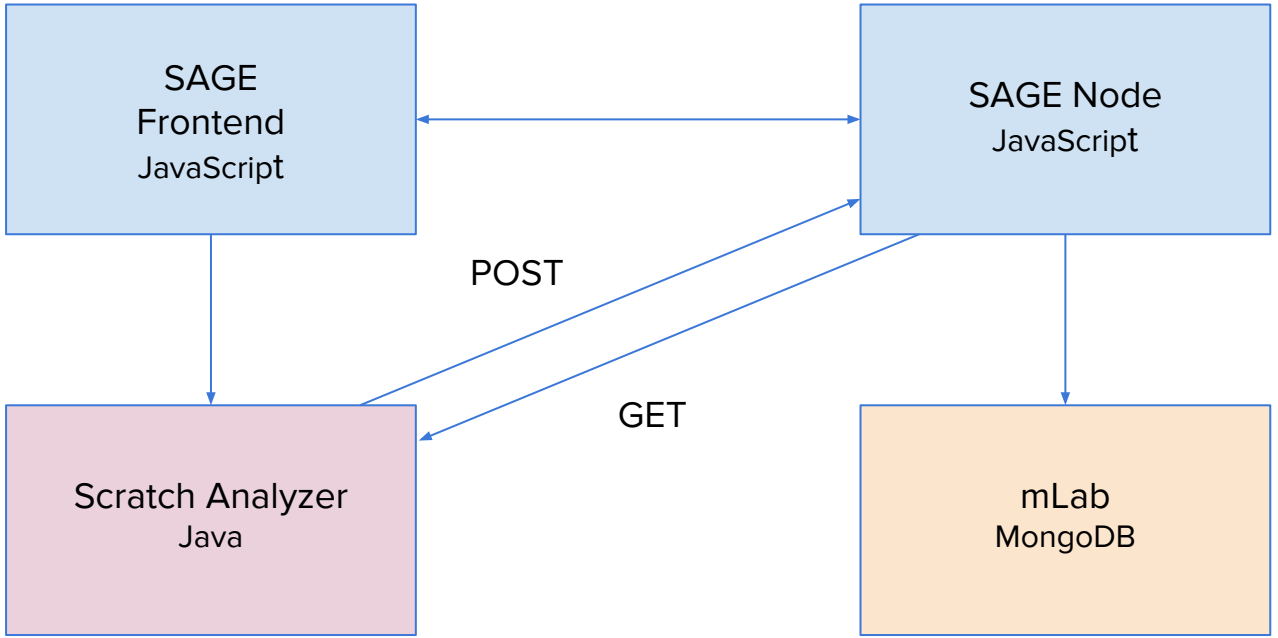
User Story

- Scratch Analyzer to Assessment Server Connectivity
- Programming Behavior Persistence
- sage-scratch Integration

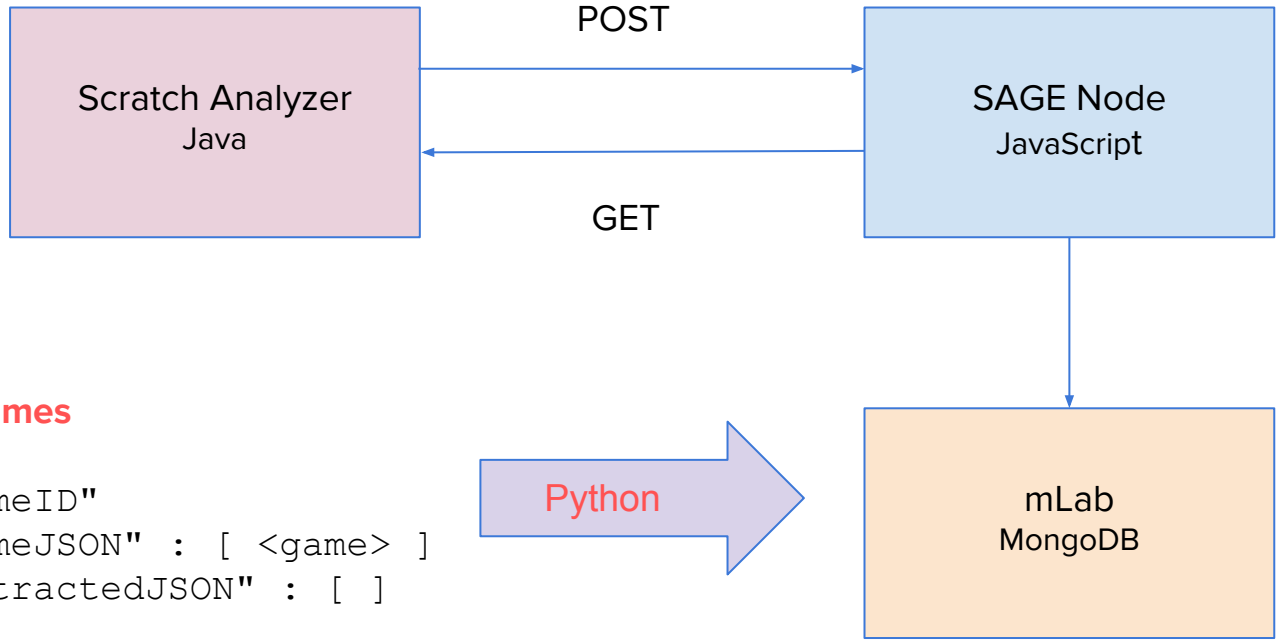
Scratch Analyzer to Assessment Server Connectivity

- Game Data stored in SAGE Node
- Update processed data in SAGE Node
- Accessible on Server instead of Local file System

Scratch Analyzer to Assessment Server Connectivity



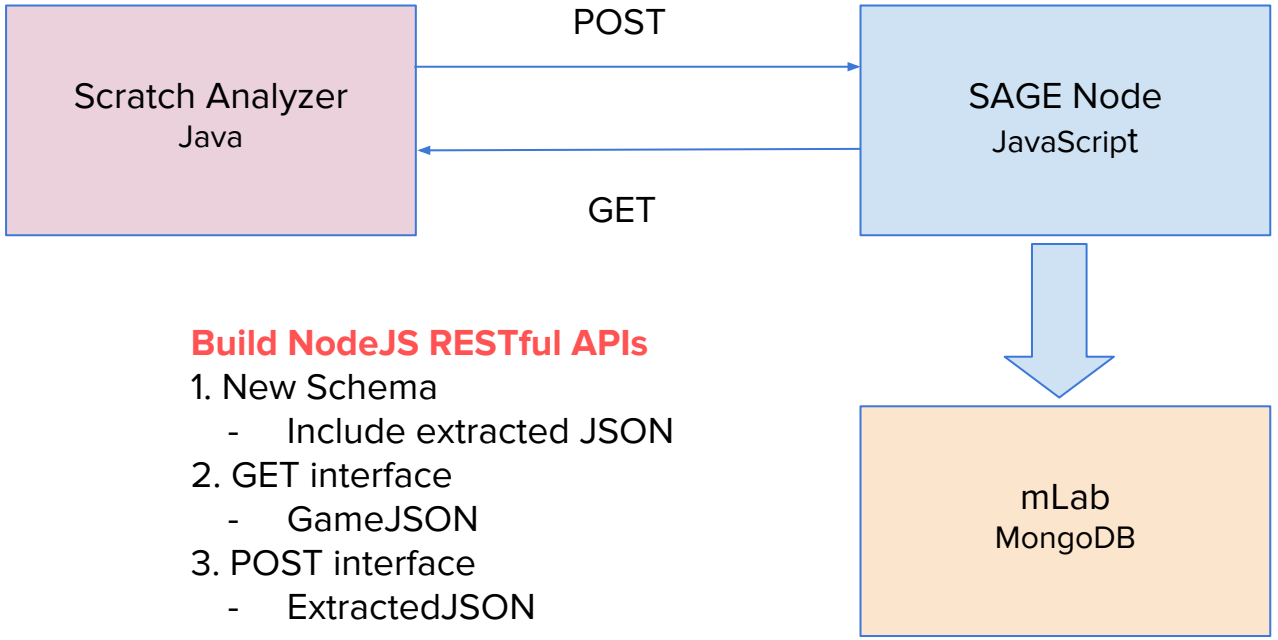
Scratch Analyzer to Assessment Server Connectivity



Create Games

```
{
     "gameID"
     "gameJSON" : [ <game> ]
     "extractedJSON" : [ ]
}
```

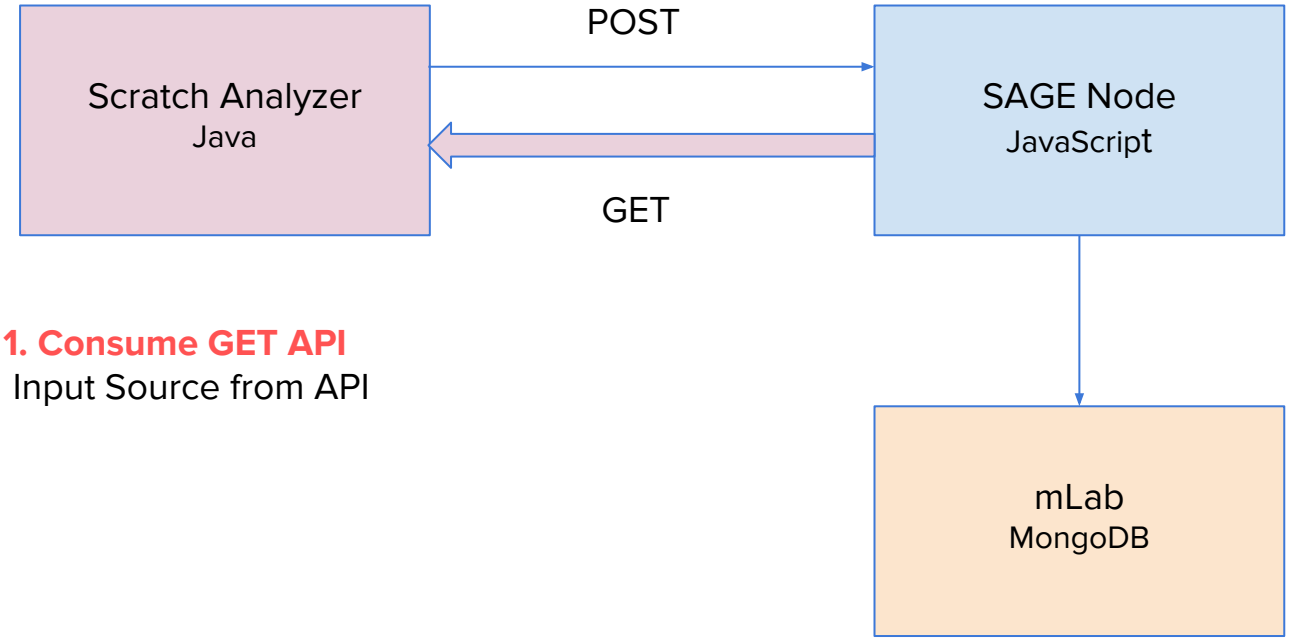
Scratch Analyzer to Assessment Server Connectivity



Build NodeJS RESTful APIs

1. New Schema
   - Include extracted JSON
2. GET interface
   - GameJSON
3. POST interface
   - ExtractedJSON

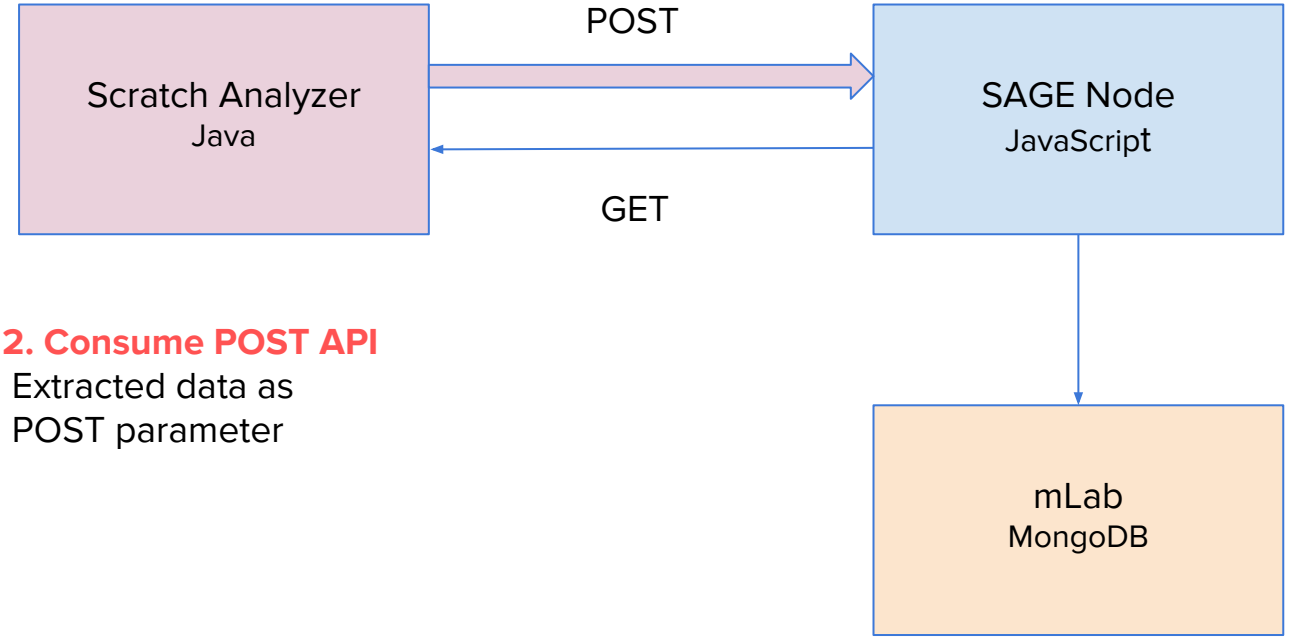
Scratch Analyzer to Assessment Server Connectivity



1. Consume GET API

Input Source from API

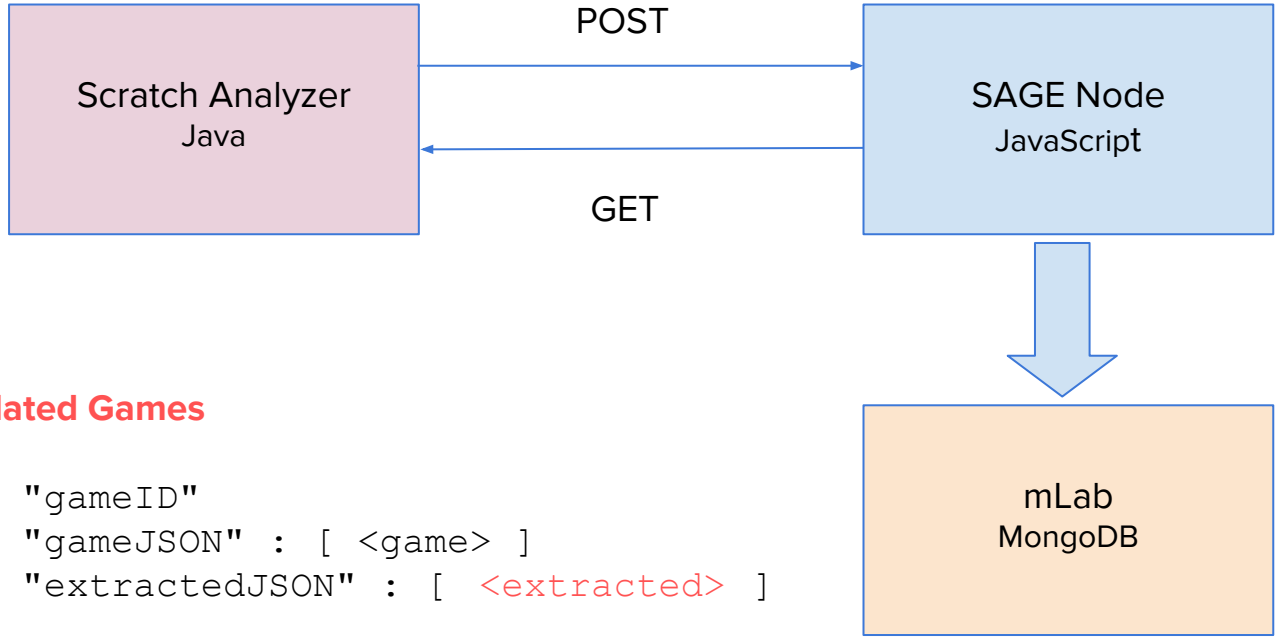
Scratch Analyzer to Assessment Server Connectivity



2. Consume POST API

Extracted data as
POST parameter

Scratch Analyzer to Assessment Server Connectivity



Updated Games

```
{
    "gameID"
    "gameJSON" : [ <game> ]
    "extractedJSON" : [ <extracted> ]
}
```

Scratch Analyzer to Assessment Server Connectivity

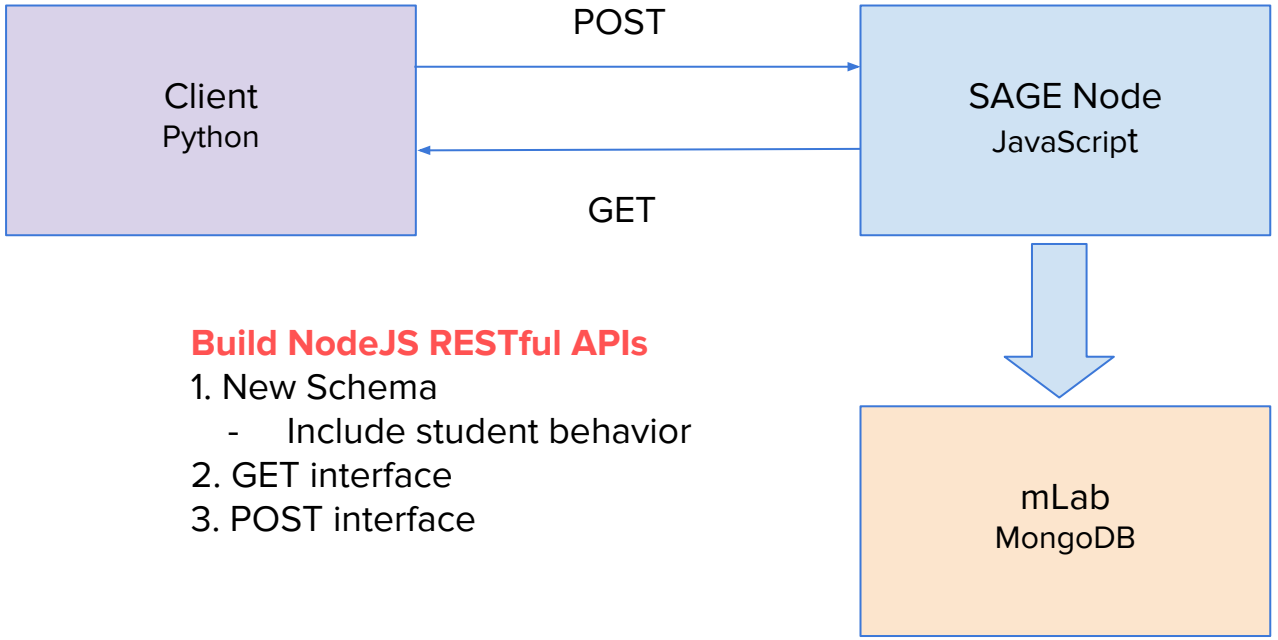
Technical Details

- Scratch Analyzer (Java) - Spring Framework
- SAGE node (NodeJS) - express.JS + mongoose

Programming Behavior Persistence

- Detected student behavior stored in mLab
- Accessible with RESTful APIs

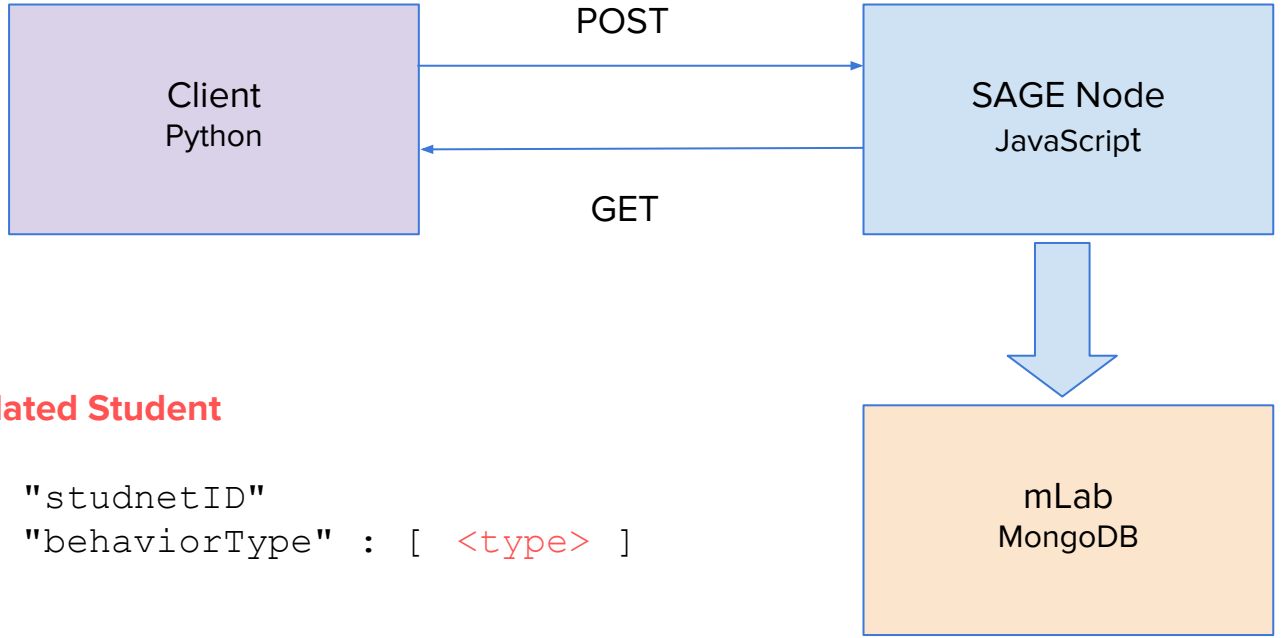
Programming Behavior Persistence



Build NodeJS RESTful APIs

1. New Schema
   - Include student behavior
2. GET interface
3. POST interface

Programming Behavior Persistence



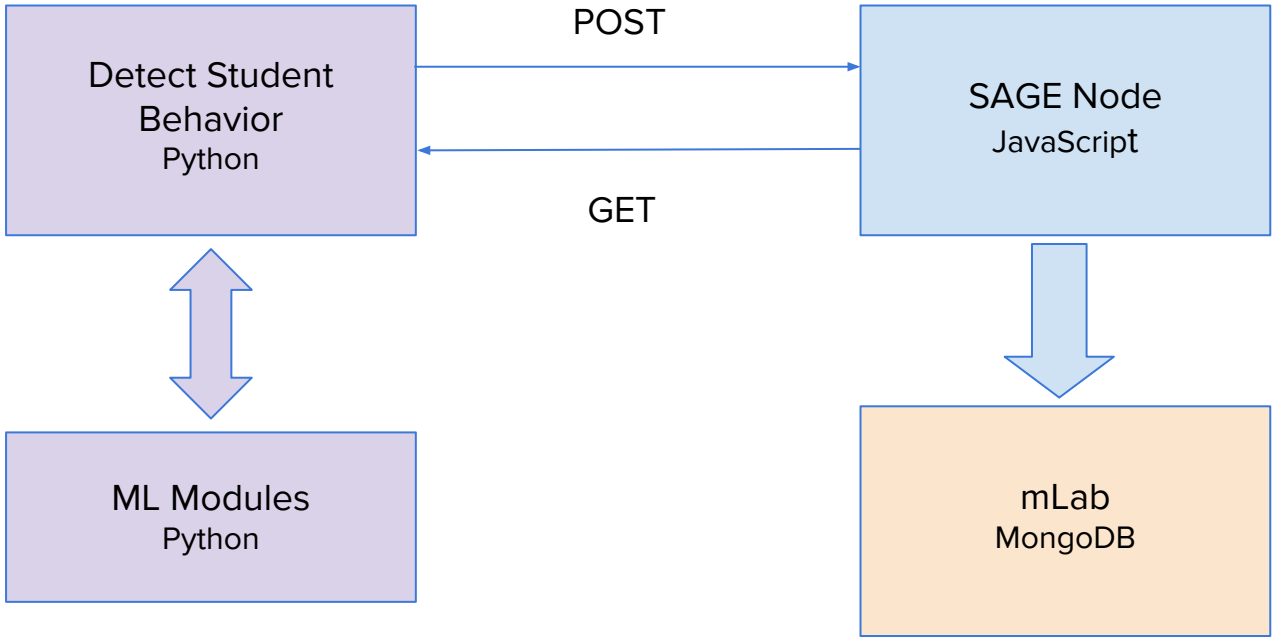
Updated Student

```
{
    "studnetID"
    "behaviorType" : [  <type> ]
}
```

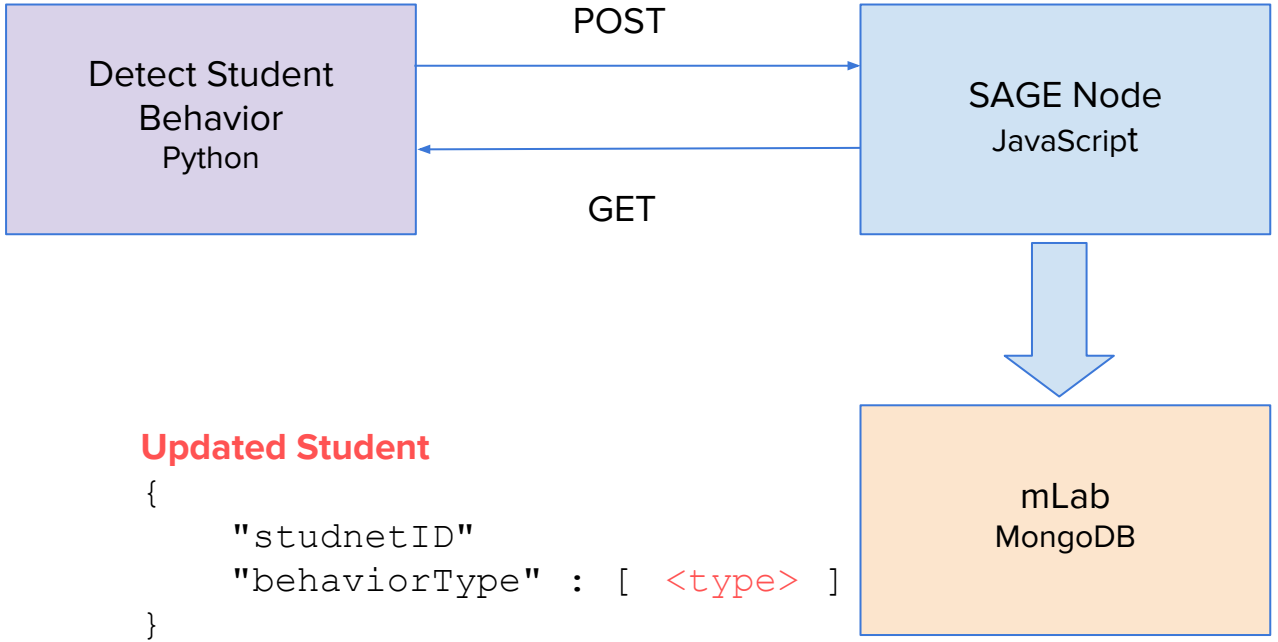
sage-scratch Integration

- Detect student behavior with games
- Integrate the whole workflow

Programming Behavior Persistence



Programming Behavior Persistence



Future Works

- Node-Scratch Integration
- Flexible database/collection interfaces at SAGE-Node
- Behavior Modeling via Researcher Role

Thank you!

Questions and Suggestions?