Google Summer of Code 2015

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Create a Standalone Tracking Library

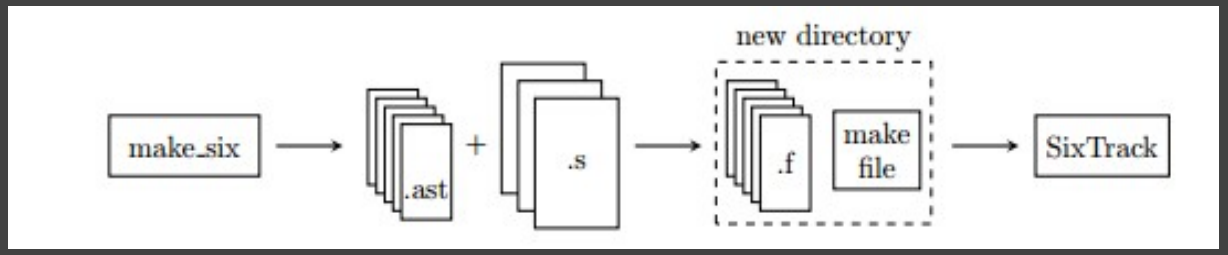
https://github.com/SixTrack/SixTrackLib

About Me

- Fascinated by the intricacies of Physics since childhood
- First exposed to the world of algorithms in High School
- Embarked upon a journey to explore the intersection of the two
- Final year Dual Degree student pursuing Msc. Physics and BE Computer Science
- Curriculum unique to BITS Pilani University
- Artist by heart, researcher by choice

SixTrack Overview

- SixTrack is a long lived particle tracking code maintained at CERN
- Tracks particle motion in accelerators, in particular, the Large Hadron Collider



- SixTrack Structure :
  - Data Structure – elemi, elemf, datai, dataf
  - Maps – Generic, Ndim, SixTrack maps

Current Progress

- Previously
  - Implemented generic maps in C
  - Built expression parser in python and evaluator in C
  - Created a Differential Algebra Library
- Currently working towards freezing the API
- Decided on the convention and developed maps for rotation and kick

TODO List

- Implementation of the remaining maps in accordance to decided convention
- Build a GPU implementation using CUDA/OpenCL
- Incorporate Differentail Algebra Library for higher dimentional vectors
- Extensive test runs
- End Product - A standalone C library:
  - Compiled in single threaded shared library
  - Compiled within the C++ DA library
  - Compiled for cuda and/or opencl

Thank You

Questions ?