First Committee Meeting

Progress Report

Jason Balaci

McMaster University

Oct. 21st, 2021

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2. Project
   - Drasil
   - Goal #1: Typed Expression Language
   - Goal #2: Model Discrimination – "ModelKinds"

3. References

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- I am **Jason Balaci**
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  - Minor in Computer Science
- Currently pursuing a thesis-based Master's of Computer Science (M.Sc) at *McMaster University*, under the supervision of **Dr. Jacques Carette**

Me, Fall 2019

Overview of Progression Towards C.S. M.Sc.

Course-related progression

- I'm required to complete[1]:

[1] https://academiccalendars.romcmaster.ca/preview_program.php?catoid=45&poid=23470&returnto=9166

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  - CAS 761 "Generative Programming" - Software course, Fall 2020
  - CAS 763 "Certified Programming with Dependent Types" - Theory & Software course, Winter 2021
  - COMPSCI 6TB3 "Syntax-Based Tools and Compilers" - Systems course, Winter 2021

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- Together, the courses completed satisfies the "Courses Requirement" as mentioned in the academic calendar[1] and the "Regulations for the Computer Science M.Sc. Program" document[2].

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- Supervisory committee is formed, and we're currently having our first supervisory committee.
  - *Supervisor*: Dr. Jacques Carette
  - Dr. Spencer Smith
  - Dr. Wolfram Kahl

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Drasil's Logo
[Carette et al., 2021][Yggdrasil - Wikipedia, 2021]

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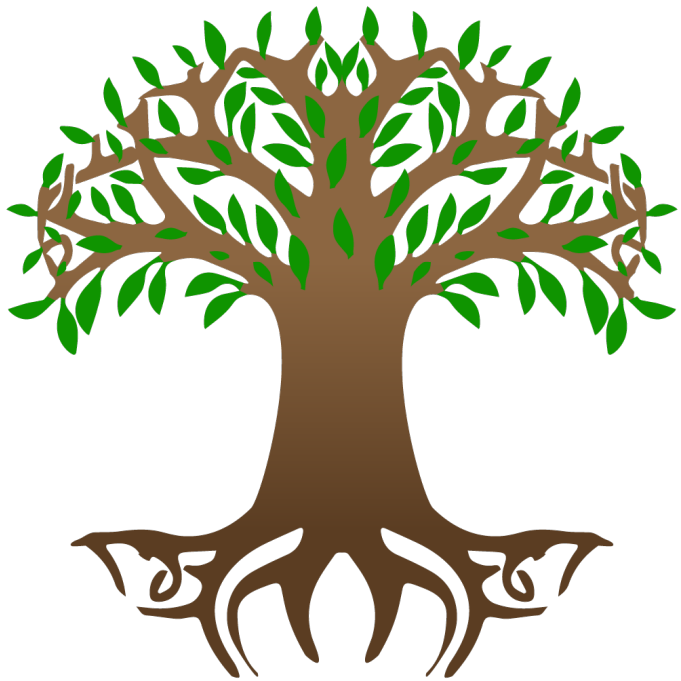

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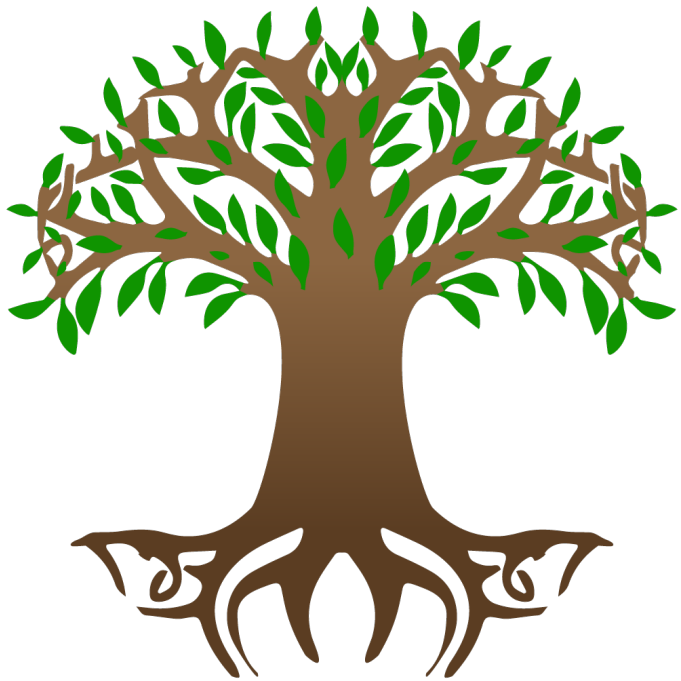

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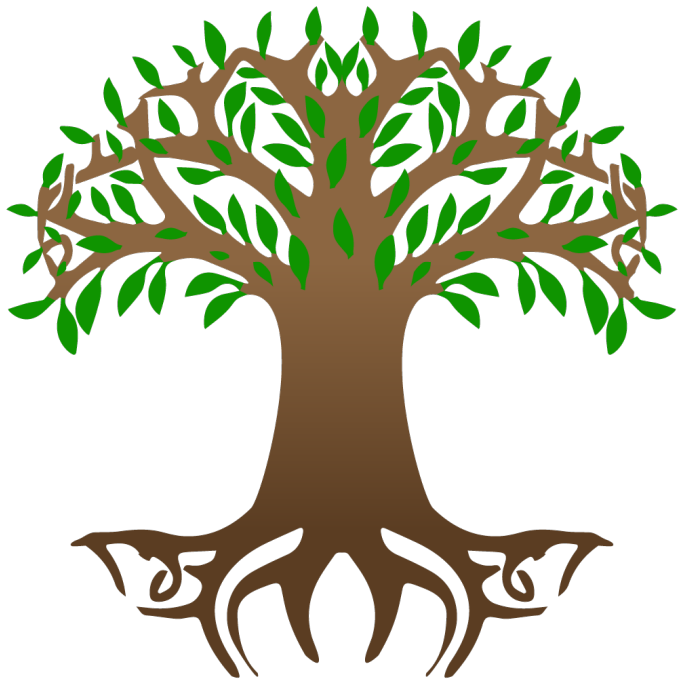

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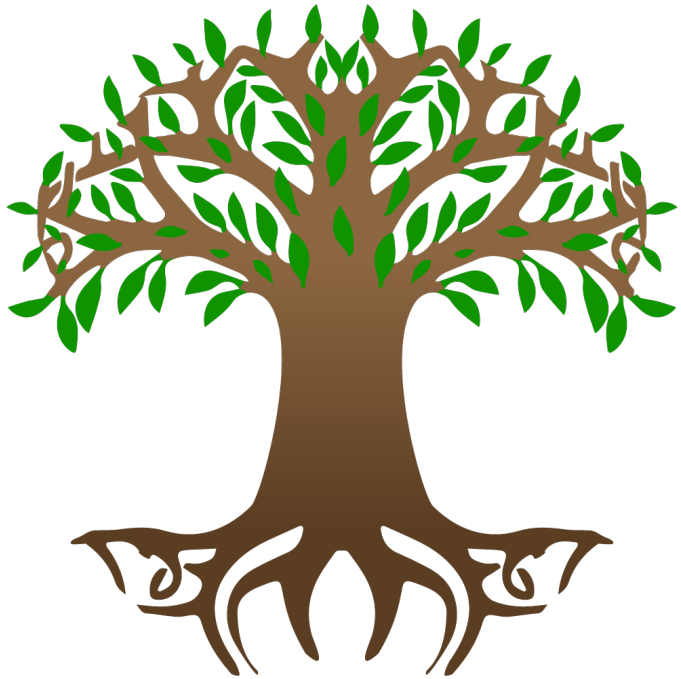

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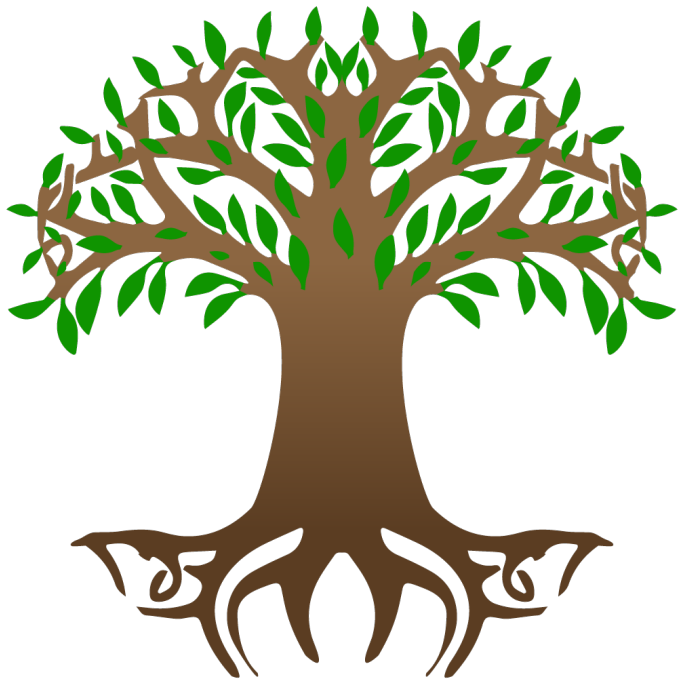

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- TODO: here!

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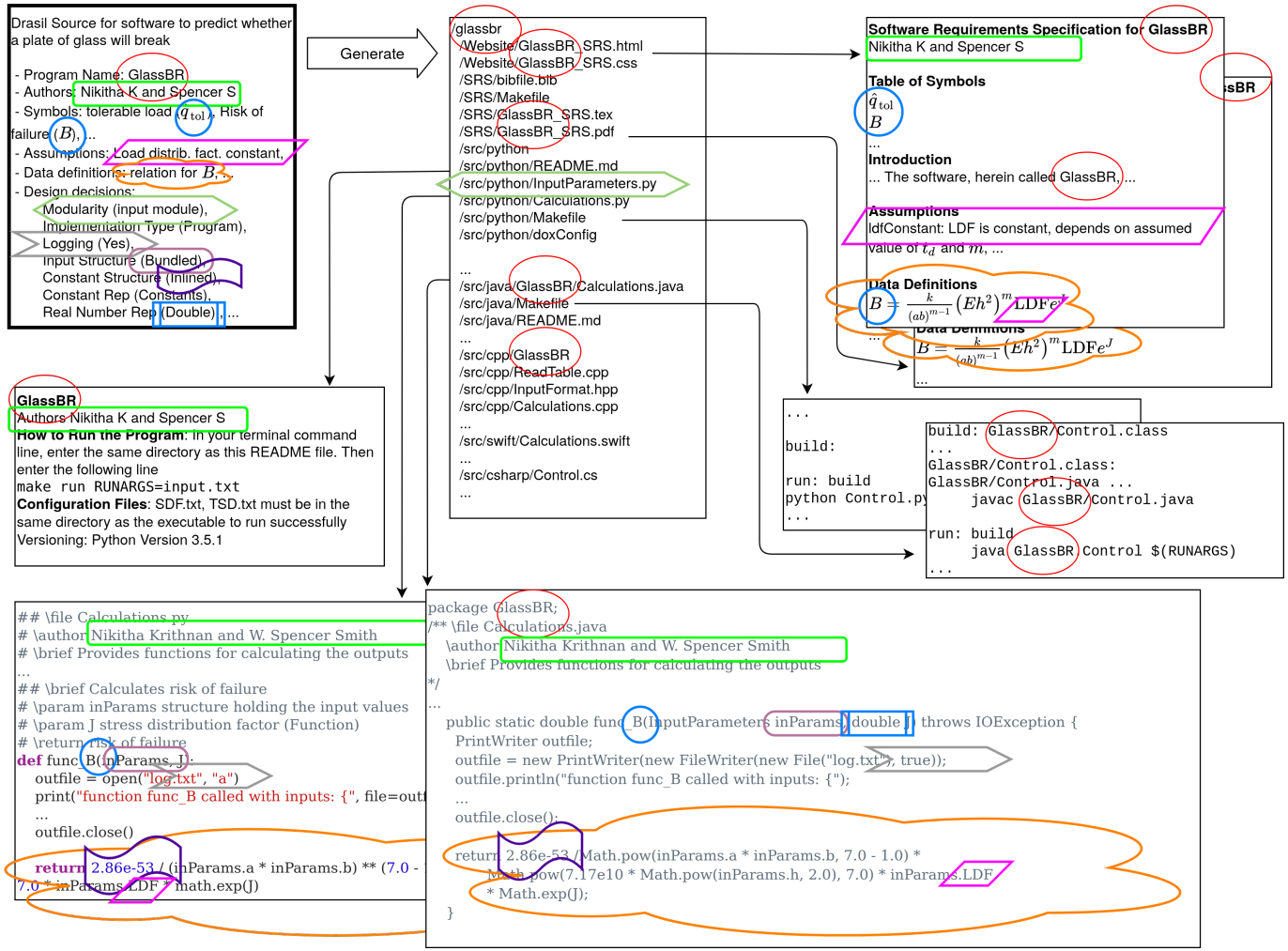
  - **Heat Transfer Coefficients between Fuel and Cladding in Fuel Rods (HGHC)** - Examining the heat transfer coefficients related to clad.

Taking a closer look at one of the examples: GlassBR

GlassBR Generates Code!



Knowledge flow from "knowledge-base"/source code to artifacts, by Dr. Spencer Smith

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A few, notable, blocking problems:

- Confidently generating usable software artifacts without strong type information places significant stress on developers, resulting in a higher likelihood of bugs in artifacts.
- Existing "theories"/"*Models"[1] don't expose enough information. They must be enriched.

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References I


Carette, J., Smith, S., Balaci, J., Hunt, A., Wu, T.-Y., Crawford, S., Chen, D., Szymczak, D., MacLachlan, B., Scime, D., and Niazi, M. (2021).
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