Software Lab Project #11
Development of the failure criteria for composites

Group Meeting #8

Date: Wednesday 22.11.2019 (1:15 to 2:45 PM)
Location: Chair of Computational Mechanics (Room: N2620)
In attendance: Ani Khaloian, Michael Richter (Project supervisors)
Ammar Khallouf, Panagiotis Gavallas, Yasuyuki Shimizu (Group members)

1. Discussion of current code implementation:

- The group members discussed with the supervisors the final progress of the project, as all the code, models and literature were uploaded to a Sync+Share folder.

- Mr. Khallouf presented to the supervisors the new merged code containing all the implemented failure criteria, along with all available damage options, in a single file. He showed how the user can select these options by changing the criteria and damage model id.

- Additionally, Mr. Khallouf showed his implementation of the same code in a Fortran program that can run without using Abaqus (PDALAC- Progressive Damage Analysis of Laminated Composites). He explained the logic behind it and that it simply requires an initial strain and its increment.

- The supervisors provided their feedback on the developed universal code and inquired as to how failure is detected.

- Mr. Shimizu informed the supervisors about his work on improving his maximum strain and Hoffman criteria implementation.

- The group members also notified the supervisors about their progress on their corresponding parts of the documentation.

2. Discussion of upcoming final presentation

- The supervisors provided useful insights for the last software lab presentation. They stressed the importance of shortening the introduction part in favor of presenting the code and analysis results, considering the plethora of implemented failure criteria. Moreover, the

need for a clear explanation of the code was highlighted, with the help of flowcharts, while also making it clear what input is required from the user.

- Mr. Khallouf also mentioned that the audience needs to be reminded that these criteria consider composites on the macroscale level, where matrix and fiber are not modelled separately.

- Mr. Richter presented a few slides summarizing the outcome of this project and giving the group members an idea of how to present their work. He also noted that this code is universal and could be applied to composites as well other materials such as wood and concrete.

- The group members agreed to continue their work on the documentation, poster, presentation and to send it to the supervisors before the deadline to be reviewed.