Topics for the project in Geometric Control Theory, MATH666

As mentioned in the course syllabus, you can choose either to take final take-home exam (the problems will be given in class on December 2 to turn in on December 12) or to make the project about some additional topic from the textbook. The latter includes 50 minute-one hour presentation to me. Below is the list of topics for the projects together with the number of the corresponding chapter/section in the book. If you choose the project option, please indicate 2 topics below and turn in this sheet (with your name) to me till Friday, November 11 (if you will not do so it means you have chosen the take-home exam option). Then I will decide which of these two indicated topics to assign to you and give you more specific instructions about the preparation of the presentation till November 16. The presentations will take place between December 6 and December 14. You have to provide me with the schedule of your exams and preferable dates and time for the presentation (within the above mentioned time window) till November 30. If you choose initially the project option but then will decide to switch to the take-home exam option you have to inform me about it till November 30 as well. You will not be able to make this switch after that. I will schedule the project presentations dates and times on December 2.

Here is the list of the topics:

1. State linearizability (chapter 4).

2. Control of configuration (chapter 7).

3. Feedback and state equivalence of linear systems (Brunovsky normal form) and state-feedback linearizability (chapter 9).

4. Sufficient optimality conditions (theory of fields of extremals), Hamilton-Jacobi equation, and dynamical programming (chapter 17).

5. Control of quantum system (section 19.3).

6. A time-optimal problem on $SO(3)$ (section 19.4).

7. Curvature of control systems (chapter 23).

8. Rolling bodies model (chapter 24).

By filling the information below you choose the project option. If you choose initially the project option but then will decide to switch to the take-home exam option you have to inform me till November 30 about it. You will not be able to make this switch after that.

YOUR NAME:

The topic of your first preference:

The topic of your second preference: