Literature review papers and docs: <https://1drv.ms/u/s!AsEr9HXe_2HVhaBXVU44mADVyipu6w?e=cW7zKY>

Color code for tasks breakdown:

Green - Bilal

Red - Braden

Blue - Shared/Common

**Stage I : 09/01/2020 to 09/30/2020**

1. Simple test case of a very flexible structure with both distributed and concentrated masses (possibly a uniform beam)
2. Test case (load cases) definition for the simple test definition
3. Definition of a method (code) to do the random ‘mistuning’ of the model
4. Discussion and decisions on codes (OpenMADO, SciPy, SOL200 etc) to be used to investigate the model updating process
5. Problem definition - objective functions/constraints
6. Debugging
7. Preliminary results

**End of stage I : 30th Sept. 2020**

At this stage, involve Cesnik in the discussion and have a 5-10 page ‘abstract’ written with a description of

1. Introduction and literature review
2. Description of methodology
3. Algorithm and test case
4. Preliminary results
5. Future (for a paper) work

**Stage II : 10/01/2020 to 10/31/2020**

1. Update the draft of the abstract with improvements and suggestions
2. Generate the setup of the more advanced test cases - either uCRM 13.5 or ASE wing
3. The ASE wing allows the use of an experimental component which is always more interesting, yet in this case, still simple enough. Can use pictures and model creation as background (so have more “preliminary results”)
4. Finish lit review, methodology, tests and results and citations
5. Submit for approval to Cesnik (or if he suggests to someone else) by 10/31/2020

**End of stage II : 31st Oct. 2020**

1. At this stage, await final approval, implement any changes needed and submit.

Timeline:

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| Timeline (week) | Task content | Milestone and progress | References and learning materials |
| 1 | Create model .bdf in NASTRAN (this includes the distributed mass and stiffness along with an agreed upon number of conc. mass)  Define load cases (as a factor of self weight - g)  Create random mistuning script  Lit review | Input file created and readily available for a simple beam model  Load cases available as a separate input file and can be run individually and altogether (subcases in SOL400 card) | Nastran Quick Reference |
| 2 | Investigate SOL200  Investigate OpenMDAO, SciPy  Lit review | Defined process for how the problem is solved  Code selected for future studies |  |
| 3 | Add intro and methodology in the overleaf document (at least 2-3 pages of lit review) and a flow chart describing the algorithm and objective functions/constraints  Inputs and outputs to the agreed upon optimizer code. Data organization, data formatting etc. | Methodology and process ready for running the problem with the beam example |  |
| 4-5 | Debug and run optimization for beam problem for different load cases (i.e. different shapes) | Sample results. Check if the initial hypothesis holds and original properties are recovered.  Engage Cesnik (or higher powers) in the conversation to see their opinion/critique |  |
| 6 | Implement suggestions and changes in the procedure based on feedback  Develop test case for the next model, either the uCRM 13.5 or the ASE wing - can include an experimental component - (prefer this)  Wrap up lit review and citations for abstract | New, and more relevant test case defined  Improved model updating process |  |
| 7-8 | Generate additional results with the updated test cases and feedback  Update the abstract with the feedback and methodology changes along with additional preliminary results (Bilal would prefer to use the ASE wing since we can add the wing experimental model and description as part of the abstract) | Abstract finished and ready for review by Cesnik and/or Cristina (or equivalent)  Deadline for this is Oct. 31st 2020  Aviation abstracts due Nov. 10th 2020 |  |