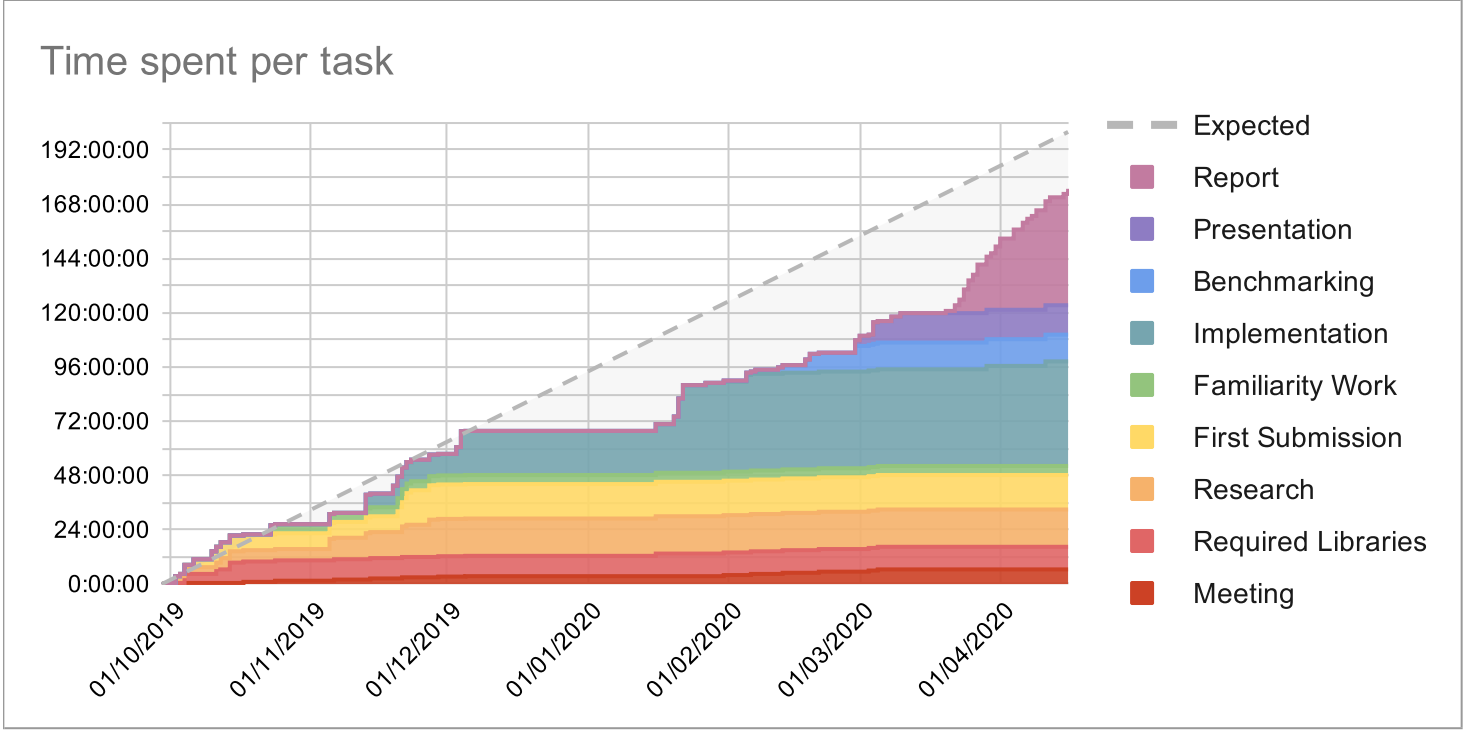

Date	Expected	Task	Time Spent	Note
29/09/2019	0:00:00		0:00:00	
30/09/2019	0:30:00	Meeting	0:30:00	Initial Meeting, explanation of project and initial work
02/10/2019	2:30:00			
02/10/2019	-0:30:00	Research	3:00:00	Read Papers over summer
03/10/2019	0:30:00			
03/10/2019	-0:30:00	First Submission	1:00:00	Drafted 2 Sections
04/10/2019	0:30:00			
04/10/2019	-3:30:00	Required Libraries	4:00:00	Got ParMetis/ PT-Scotch Sources, Intel Compiler, cuda. Need to build still.
06/10/2019	-1:30:00			
06/10/2019	-4:00:00	First Submission	2:30:00	Gantt Diagram
10/10/2019	0:00:00			
10/10/2019	-3:30:00	First Submission	3:30:00	Draft and submission
11/10/2019	-2:30:00			
11/10/2019	-4:30:00	Required Libraries	2:00:00	Build Libraries and OP2
12/10/2019	-3:30:00			
12/10/2019	-5:30:00	Research	2:00:00	Reading papers
14/10/2019	-3:30:00			
14/10/2019	-6:30:00	Required Libraries	3:00:00	Intel Load Libraries. Matlap eq. Octane to generate meshes. Managed to build and run airfoil_seq, however the numbers don't seem to be correct.
17/10/2019	-3:30:00			
17/10/2019	-4:00:00	Meeting	0:30:00	Skype Meeting, covered issues, next steps (rebase)
23/10/2019	2:00:00			
23/10/2019	-2:00:00	Familiarity Work	04:00:00	Rebase op2, run seq (test PASSED). run mpi found issues.
24/10/2019	-1:00:00			
24/10/2019	-1:30:00	Meeting	0:30:00	Set Timetable for rest of term, resolved issues with Scotch, discussed location for my implementation
05/11/2019	10:30:00			
05/11/2019	6:00:00	Research	4:30:00	cuda tutorial, reading exising translator python files
06/11/2019	7:00:00			

06/11/2019	6:30:00	Meeting	0:30:00	Created remote git branch, set deadline for progress report draft. Discussed progress. Also discussed code guidelines - git clang format
13/11/2019	13:30:00			
13/11/2019	7:30:00	Implementation	6:00:00	Re-did rebase, fixed conflicts. Fixed Makefile for scotch references, and LD_LIBRARY_PATH for HDF5 .so file
13/11/2019	5:30:00	Research	2:00:00	Determining values and origin of paramters to back-end gen functions.
14/11/2019	6:30:00			
14/11/2019	6:00:00	Meeting	0:30:00	
19/11/2019	11:00:00			
19/11/2019	7:30:00	Implementation	3:30:00	Code reading, updated seq_jit with new kernel value initialisation, modified op2.py to call new cuda_jit function
20/11/2019	8:30:00			
20/11/2019	4:30:00	First Submission	4:00:00	Begin Progress report, git cleanup
21/11/2019	5:30:00			
21/11/2019	5:00:00	Meeting	0:30:00	Discuss Progress Report draft
21/11/2019	3:30:00	First Submission	1:30:00	Additions discussed in meeting
21/11/2019	1:30:00	Research	2:00:00	Looked into enqueue_kernel to see how lazy ex is done, also header file creation.
22/11/2019	2:30:00			
22/11/2019	1:45:00	Research	0:45:00	Realised constants are defined by input, understand jit purpose now
22/11/2019	0:00:00	First Submission	1:45:00	Create Flow chart to explain JIT + write explanation
23/11/2019	1:00:00			
23/11/2019	0:00:00	First Submission	1:00:00	Finish Flow chart boxes, wording alterations
27/11/2019	4:00:00			
27/11/2019	1:45:00	Research	2:15:00	Investigate cuda seq generation in existing source, and halo message passing in papers/online. https://www.oerc.ox.ac.uk/sites/default/files/uploads/profile-pages/Gihan/JPDC-OP2.pdf
29/11/2019	3:45:00			
29/11/2019	3:25:00	Meeting	0:20:00	Discussed atomics flag in cuda aot codegen, doesn't change because the choice of codepath is hard coded to not be colouring now.
03/12/2019	7:25:00			
03/12/2019	4:25:00	Implementation	3:00:00	Removed seq codegen and copied jit_include and user_function into file. Soa is Struct of Arrays, and can be forced in type declaration, meaning indicies need to include a "stride".
04/12/2019	5:25:00			
04/12/2019	-1:35:00	Implementation	7:00:00	Continued cuda jit codegen into kernel function files (completed), still errors when building with make - may need to look at const file generation
05/12/2019	-0:35:00			
05/12/2019	-0:45:00	Meeting	0:10:00	Discussed progress with cuda jit, and benchmarking/next steps
16/01/2020	41:15:00			
16/01/2020	39:15:00	Implementation	2:00:00	Makefile, fix cuda function call
16/01/2020	38:15:00	Required Libraries	1:00:00	Update cuda driver
20/01/2020	42:15:00			
20/01/2020	38:55:00	Implementation	3:20:00	Fixing bugs and small mistakes, investigate const for cuda
21/01/2020	39:55:00			

21/01/2020	36:25:00	Implementation	3:30:00	consts with dim1 seem to work using preprocessor #define. multi dim consts tho....
21/01/2020	31:55:00	Implementation	4:30:00	multi dimension constant value reaches kernel, using extern shared memory. Segfault in adt_calc on iteration 235 tho and result seems to be 0 always. Running out of shared memory?
22/01/2020	32:55:00			
22/01/2020	29:25:00	Implementation	3:30:00	Cuda kernels failing to run. Caused by rec/base functions having the same name it seems although unsure exactly why. Restructured codegen to replace func name with name_rec: resolved
22/01/2020	27:00:00	Implementation	2:25:00	decided to break array constants into elements and define? should discuss approach with gihan but it works and completes ~2s slower than aot compiled :/
27/01/2020	32:00:00			
27/01/2020	31:00:00	Implementation	1:00:00	Re-added kernel timers and updated Makefile with JIT/Non-JIT option
31/01/2020	35:00:00			
31/01/2020	34:30:00	Meeting	0:30:00	Discussed completed work, and next steps: Volna translation, Orac Benchmark, Loop Tiling paper
31/01/2020	34:00:00	Benchmarking	0:30:00	Attempted Orac run, encountered issue with Cuda module. Chiron has docs on this but discontinued
05/02/2020	39:00:00			
05/02/2020	38:30:00	Benchmarking	0:30:00	Requested and gained access to Cambridge HPC cluster. No password? Need to speak to Gihan about this
05/02/2020	35:30:00	Implementation	3:00:00	Cloned Volna and MG-CFD for translating. No input data for Volna but found some for MG, and identified issue with translator (#includes going after user defined func). Still seems to be issue with null pointer in compute_step_factor : 30
06/02/2020	36:30:00			
06/02/2020	36:00:00	Meeting	0:30:00	Discussed progress, HPC systems access and term plan. Might need to implement colouring for K80s (Kepler)
07/02/2020	37:00:00			
07/02/2020	36:10:00	Benchmarking	0:50:00	Emailed cam hpc about access. Attempted to generate Volna input data, but issues with supplimentary tool
12/02/2020	41:10:00			
12/02/2020	40:10:00	Benchmarking	1:00:00	Attempting Cam system access, managed to compile but running with slurm indicates an account issue
13/02/2020	41:10:00			
13/02/2020	40:40:00	Benchmarking	0:30:00	Modify Makefile to allow JIT and non-JIT Binaries without rebuilding for comparison
13/02/2020	40:10:00	Meeting	0:30:00	Ran Generated code on Gihan's machine for benchmarking. Observed consistant 6s time lost to compilation
18/02/2020	45:10:00			
18/02/2020	42:40:00	Benchmarking	2:30:00	Added timer wrapper around compilation for comparison. Read about NVRTC - should definitely mention if not implement. Wrestled some more with CAM HPC and managed to submit the jobs. No results yet however
19/02/2020	43:40:00			
19/02/2020	41:10:00	Benchmarking	2:30:00	Got results from Cam system. Unable to build mpi_seq version of OP2 though
21/02/2020	43:10:00			

21/02/2020	42:40:00	Meeting	0:30:00	Disussed next steps, set next meeting for preliminary slides for presentation.
29/02/2020	50:40:00			
29/02/2020	47:40:00	Benchmarking	3:00:00	Get parallel libs onto Cam system, to compile gen_seq OP2, run mpi_genseq airfoil for jit comparison
29/02/2020	45:10:00	Presentation	2:30:00	Colour scheme, basic structure
01/03/2020	46:10:00			
01/03/2020	44:10:00	Presentation	2:00:00	
03/03/2020	46:10:00			
03/03/2020	45:40:00	Meeting	0:30:00	Discussed slides, changes to be made
04/03/2020	46:40:00			
04/03/2020	43:10:00	Presentation	3:30:00	Re-ordered slides,
04/03/2020	42:40:00	Benchmarking	0:30:00	Get Machine specs
04/03/2020	41:10:00	Presentation	1:30:00	Making diagrams
05/03/2020	42:10:00			
05/03/2020	41:40:00	Meeting	0:30:00	Discussed Final slides.
08/03/2020	44:40:00			
08/03/2020	42:40:00	Presentation	2:00:00	Tweaking and Finalising
10/03/2020	44:40:00			
10/03/2020	43:10:00	Presentation	1:30:00	Finalising and giving Presentation
20/03/2020	53:10:00			
20/03/2020	52:10:00	Report	1:00:00	Structure
22/03/2020	54:10:00			
22/03/2020	52:40:00	Report	1:30:00	Intro and Background first draft
22/03/2020	51:40:00	Report	1:00:00	Intro redraft, Background & Motivations
23/03/2020	52:40:00			
23/03/2020	50:10:00	Report	2:30:00	Specification section first draft
24/03/2020	51:10:00			
24/03/2020	48:40:00	Report	2:30:00	Implementation section and tweeks
24/03/2020	46:40:00	Report	2:00:00	Implementation started codeGen breakdown
25/03/2020	47:40:00			
25/03/2020	46:10:00	Report	1:30:00	Continue codegen explanation
25/03/2020	43:40:00	Report	2:30:00	Continue codegen explanation
26/03/2020	44:40:00			
26/03/2020	42:10:00	Report	2:30:00	Continue codegen explanation: Host Function Differences
27/03/2020	43:10:00			
27/03/2020	41:10:00	Report	2:00:00	Finishing kernel file code gen section
27/03/2020	38:40:00	Report	2:30:00	Finished Kernel File section, some tweaks and a long time on one figure
29/03/2020	40:40:00			
29/03/2020	38:40:00	Report	2:00:00	Tweaking figures, User Function section
29/03/2020	37:10:00	Implementation	1:30:00	Adding support for variable index for array constant
30/03/2020	38:10:00			
30/03/2020	36:40:00	Report	1:30:00	Tweaks and redrafting
31/03/2020	37:40:00			
31/03/2020	34:40:00	Report	3:00:00	Redrafting, and Master Kernels File section
01/04/2020	35:40:00			
01/04/2020	34:10:00	Report	1:30:00	Master Kernels File Section, started Makefile section, fixed small bug
01/04/2020	32:10:00	Report	2:00:00	Started Testing section, tested wth icpc and working on gcc
04/04/2020	35:10:00			
04/04/2020	33:40:00	Report	1:30:00	Wrote up Testing Plan, made Figures

04/04/2020	32:10:00	Report	1:30:00	Writing testing results started
04/04/2020	31:10:00	Report	1:00:00	Testing results codegen done
06/04/2020	33:10:00			
06/04/2020	30:10:00	Report	3:00:00	Finished testing section
07/04/2020	31:10:00			
07/04/2020	29:25:00	Report	1:45:00	Benchmarking section done, started results
08/04/2020	30:25:00			
08/04/2020	29:10:00	Report	1:15:00	Finished Benchmarking, start going from start throguh research
09/04/2020	30:10:00			
09/04/2020	27:40:00	Report	2:30:00	Started Research Section
11/04/2020	29:40:00			
11/04/2020	28:10:00	Report	1:30:00	Wrote more research section, discovered issue with SoA codegen
11/04/2020	26:10:00	Implementation	2:00:00	Fixed SoA codgen, attempted to add further optimisation by declaring but proved to be an overcomplication
11/04/2020	25:40:00	Report	0:30:00	Started CUDA research section
12/04/2020	26:40:00			
12/04/2020	24:55:00	Report	1:45:00	Cuda Research Section progress
15/04/2020	27:55:00			
15/04/2020	26:25:00	Report	1:30:00	Related Work research section
16/04/2020	27:25:00			
16/04/2020	25:10:00	Report	2:15:00	Evaluation started