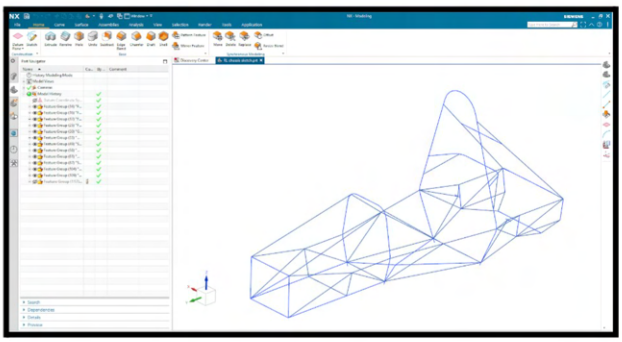
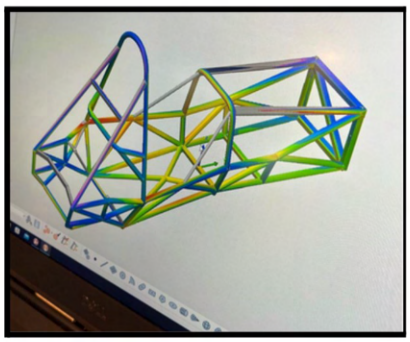
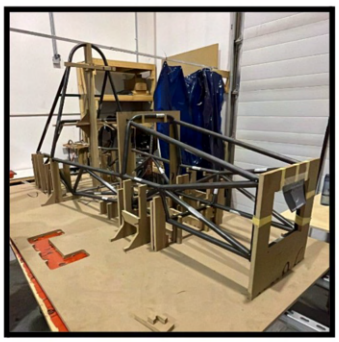
GORDON ZHENG

MECHANICAL ENGINEERING STUDENT

FSAE IC & EV CHASSIS | OK Motorsports

JUNE 2023 - PRESENT

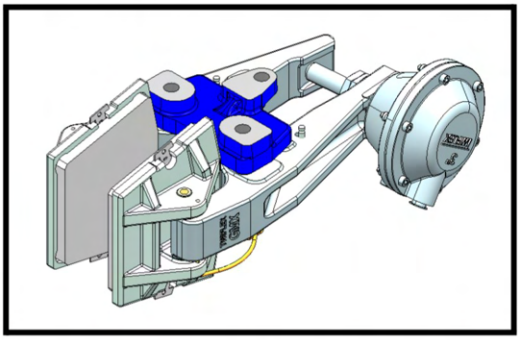
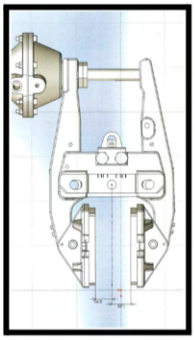
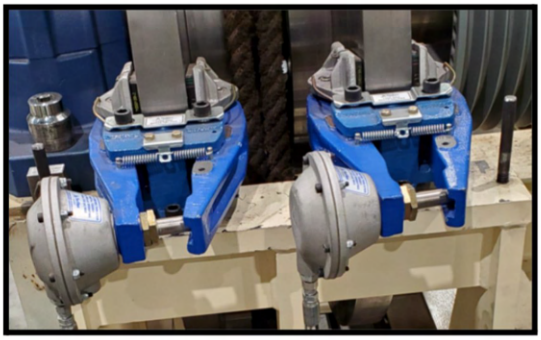
- Designed IC and EV spaceframe Chassis in NX for FSAE competitions that must adhere to a 140+ page rulebook and pass design submissions
- Collaborated with 11 unique sub-teams and 120+ members each year to optimize Chassis weight, rigidity and manufacturability
- Manufactured 40+ MDF jigs using a waterjet to help hold Chassis tubes in place during the in-house welding process
- Validated the torsional rigidity and stiffness of the bare chassis by using FEA, physical torsion tests and 3D scanners

REMODELLED BRAKE CALIPER ASSEMBLY | Kadant Carmanah Design

AUG 2024

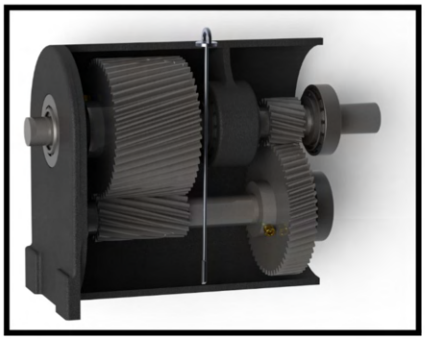
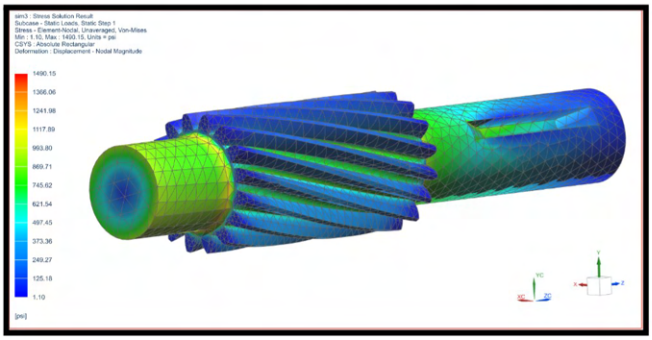
- Remodelled our vendor's brake calipers in Solidworks to match the modified version in inventory
- Communicated with OEM and various vendors to determine what changes were implemented to achieve the modified brake caliper
- Cross-referenced several technical data sheets and assembly drawings to ensure all parts of the brake caliper are accounted for and modelled
- Provided the ability to perform tolerance and fitment tests for the brake caliper on Solidworks before physical manufacturing and assembly

TWO-STAGE REDUCTION GEARBOX | The University Of British Columbia

JAN 2024 - APRIL 2024

- Developed a 2-stage helical gearbox design to drive a lumber processing machine using Excel, Solidworks and NX
- Performed optimization in Excel to determine which combinations of components would result in the best solution
- Selected components based on calculated forces, required service life and safety factors for the application's characteristics
- Verified our gearbox design by performing FEA on Solidworks and determined potential failure points from the resulting stress and fatigue data

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GORDON ZHENG

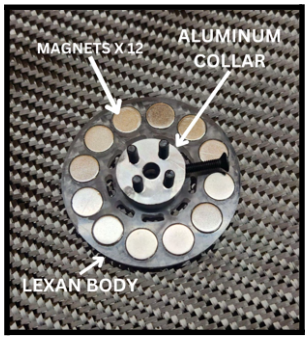
MECHANICAL ENGINEERING STUDENT

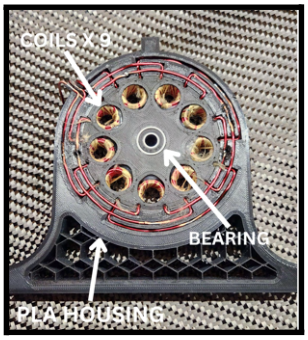
CARBON FIBRE FUEL TANK | UBC ThunderBikes — JUNE 2024

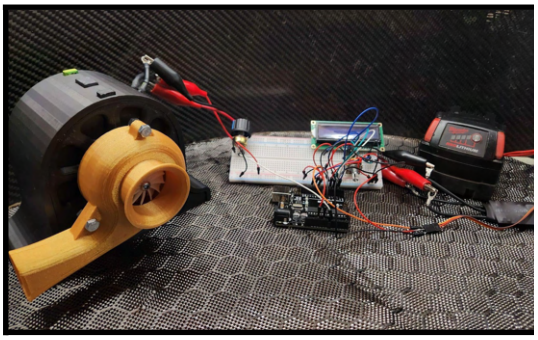
- Assisted in the manufacturing of a composite gas tank for an electric motorbike through wet layups and machine clean-ups
- Used the vacuum bag technique on a 7-layer carbon fibre base with a 2 mm thick fibreglass finish to achieve a low porosity final product
- Reduced the weight of the fuel tank by 50% compared to the stock mild steel gas tank while delivering electrical insulation properties

AXIAL FLUX BRUSHLESS DC MOTOR | The University Of British Columbia — JAN 2024 - APRIL 2024

- Designed, manufactured and assembled a brushless DC axial flux motor with a team of 4 engineering students
- Constructed 12 rotors and 9 stator poles that utilize time square wave signals to time the different phases within the coils for motor self-sufficiency
- Tailored the housing unit to be modular and 3D printable for future iterations and design adaptations
- Sustained 12,000 rpm with the use of a 3D-printed supercharger output load

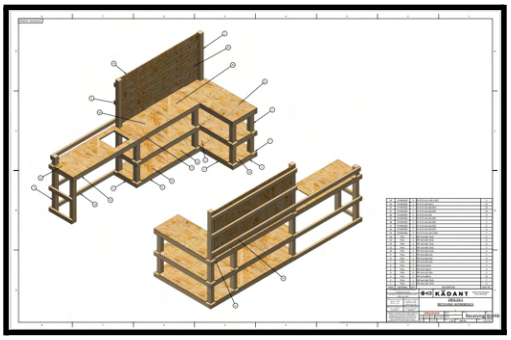


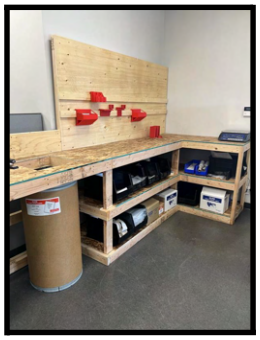




CUSTOM WOODEN WORKBENCH | Kadant Carmanah Design — JUNE 2024

- Used Solidworks weldments to design the overall frame and Solidworks assembly features to determine manufacturing tolerances
- Produced step-by-step assembly drawings in Solidworks to simplify the manufacturing process and reduce confusion in more complex parts
- Altered many 3D printable workstation storage designs to be compatible with french cleat designs to ensure modularity and efficient use of space
- Budgeted, quoted and sourced all materials used in the manufacturing and assembly of the final product





Combo		left over
		14.25
		12.5
		12.75
22.5		7.75
22.5		9.25
22.5		11
21	21	1
21		12.5
		36.75
		41.5
		43
		96

QTY	Combo		left over
1	81.75		14.25
3	83.25		12.75
2	83.5		12.5
2	80		16
1	65.75	22.5	7.75
4	64.25	22.5	9.25
1	62.5	22.5	11
1	62.5	21	12.5
1	59.25	21	15.75
3	54.5	39.75	1.75
3	53	39.75	3.25
1	21	46.75	28.25
23			

Combo	left over
	16
39.75	9.5
39.75	16.5
	56.25

2x4	$3.98	->	$79.60
4x4	$17.97		$107.82
4x8	$27.98		$111.92
		TOTAL	$299.34

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