

Week	Milestones
W1	<ul style="list-style-type: none"> Robot <ul style="list-style-type: none"> Assess python libraries and virtual simulator Basic arm calibration with the usage of the integrated camera (α) Move robot programmatically: follow instructions, move arm A \rightarrow B Grab and release a predefined object at a predefined location. Define robot range, constraints and precision LLM/AI <ul style="list-style-type: none"> Select and test generative AI solution to create textures from a textual prompt Create a few textures (4-5) stored and labeled Tracing <ul style="list-style-type: none"> Select unwrapping solution (projection, direct AI generation, ...) Lay out algorithmic steps for generating drawing instructions from a texture 3D Modeling <ul style="list-style-type: none"> Sketch supports, verified by expert Print duck to experiment with 3D printer Admin <ul style="list-style-type: none"> Precisely define MVP (what it is / isn't) and milestones Define interfaces between steps Complete the milestones for the whole 7 weeks (this table)
W2	<ul style="list-style-type: none"> Tracing <ul style="list-style-type: none"> Pipeline done : wrapped texture to 3D drawing segments Define performance evaluation criteria 3D Modeling <ul style="list-style-type: none"> Duck supports are printed Print base duck model Blockers: <ul style="list-style-type: none"> not useful at the moment ? unclear constraints Evaluate adequacy of duck+support Sketch a 3D design that can be used to have a fixed configuration of object and tools (eventually the supports) (needed to be verified by expert) Robot <ul style="list-style-type: none"> Hand-eye TCP calibration Blockers: <ul style="list-style-type: none"> access to robot Assess pen gripping constraints Draw on a 2D surface following instructions (tools already set and grabbed by the robot) <ul style="list-style-type: none"> If successful, draw more complex shapes/filling (e.g. infinity shape + multiple pass) If successful, draw on a 3D plane Add mock shapes into the virtual simulation

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	<ul style="list-style-type: none"> ▸ Can grab and change tools and manipulate them (not drawing only hold into a initial position) • LLM/AI <ul style="list-style-type: none"> ▸ Select and test generative AI solution to create textures from a textual prompt Blockers: <ul style="list-style-type: none"> – access to disco/cha-cha – client's decision (internal / external solution) ▸ Evaluate generative model limits: prompt fidelity, instructions following (output format/shape) ▸ Create a few textures (4-5) stored and labeled ▸ Create quality benchmark for evaluating/comparing GenAI solutions • General <ul style="list-style-type: none"> ▸ Choose and get pen ▸ Choose duck model ▸ Get client feedback/commitment to a solution ▸ Create basic fully integrated pipeline <p>End goals</p> <ul style="list-style-type: none"> • Paint a simple pattern (line) on cubic duck (through the whole pipeline) • Bottlenecks: <ul style="list-style-type: none"> ▸ 3D printed duck ▸ Pen
W3	<ul style="list-style-type: none"> • Tracing <ul style="list-style-type: none"> ▸ Full pipeline done: side images to 3D drawing segments ▸ Path optimization working as defined by scope and goal • 3D Modeling <ul style="list-style-type: none"> ▸ Print tool support + attachments • Robot <ul style="list-style-type: none"> ▸ Draw a line on a duck and switch pen • General <ul style="list-style-type: none"> ▸ MVP / Prototype • LLM/AI <ul style="list-style-type: none"> ▸ Generate unwrapped textures from models that respect cubic/simple-shaped duck model shape
W4	<ul style="list-style-type: none"> • Robot <ul style="list-style-type: none"> ▸ Optimize calibration / drawing precision ▸ Constant drawing pression ▸ Control drawing angle • UI <ul style="list-style-type: none"> ▸ Functional interface to trigger pipeline (according to CEO's needs)
W5	<ul style="list-style-type: none"> • Robot <ul style="list-style-type: none"> ▸ Optimize calibration precision

Week	Milestones
	<ul style="list-style-type: none"> ▸ Constant drawing pression ▸ Control drawing angle
W6	<ul style="list-style-type: none"> • Robot <ul style="list-style-type: none"> ▸ Optimize drawing speed • General <ul style="list-style-type: none"> ▸ Functional product (β)
W7	<ul style="list-style-type: none"> • Robot <ul style="list-style-type: none"> ▸ Reserve