

| Week | Milestones |
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| 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 → 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 <p>Blockers:</p> <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 <p>Blockers:</p> <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 <p>Blockers:</p> <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 |

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