



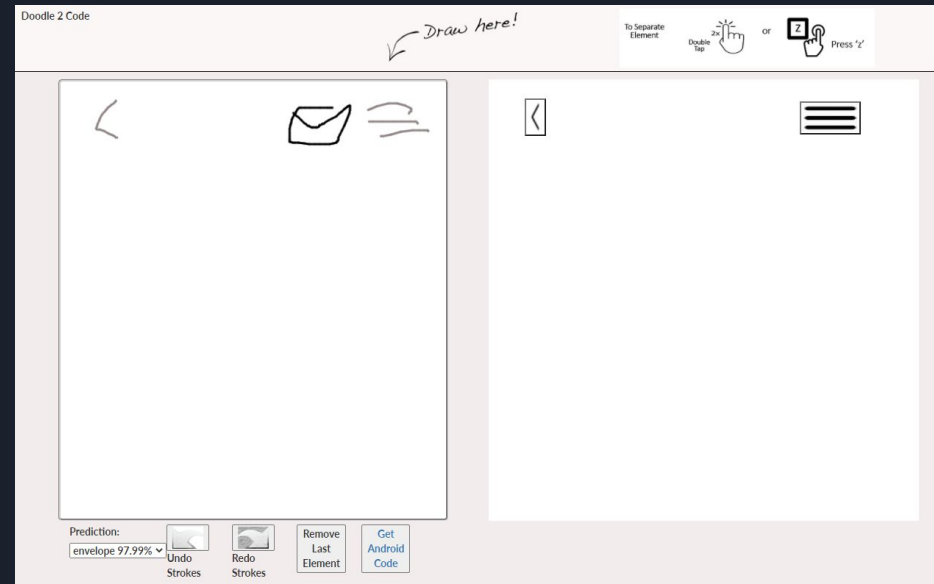
# Doodle2App Testing: Inception

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Github Repository:  
[https://github.com/1040mxg/CSE6324\\_project](https://github.com/1040mxg/CSE6324_project)

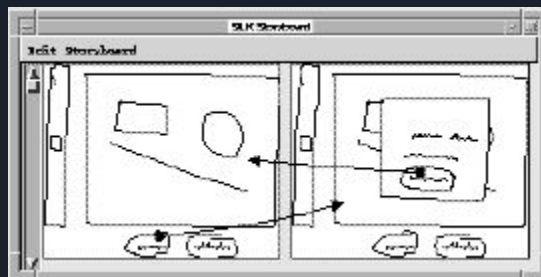
# Overview

- UI development starts with a hand-drawn sketch, after which UI designers have to create digital prototypes which is costly in both labour and time
- Doodle2App (<https://pixeltoapp.com/doodle/>) converts a user-drawn sketch into compilable Android code which would streamline the development process
  - Using an online process, users draw onto a canvas on the web app, one UI element at a time. The element is then classified using Doodle2App's recurrent neural network to generate a preview of the UI. This can then be exported into Android code. [2]
- With this project, we will expand on Doodle2App



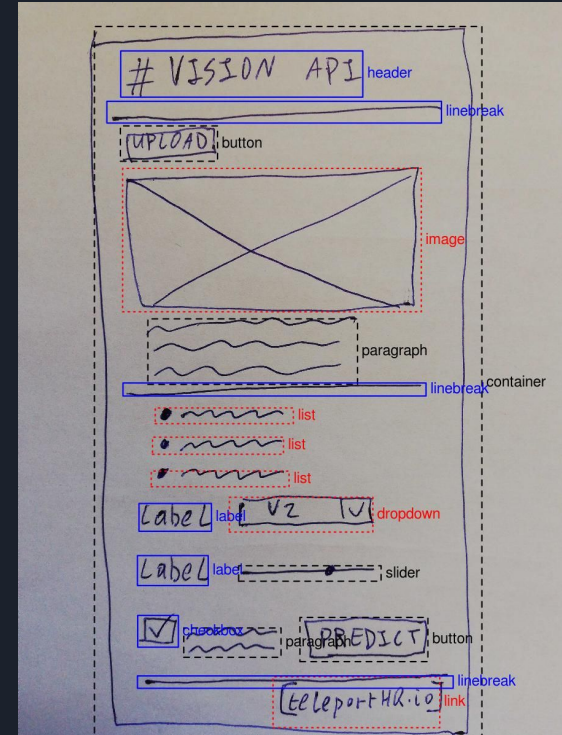
# Competitors: SILK

- <http://www.cs.cmu.edu/~landay/research/publications/CHI96/video.html>
- “Sketching Interfaces Like Crazy”
- Interactive tool that “ allows designers to quickly sketch an interface using an electronic stylus”, ie. a Wacom pen and computer screen [2]
- Very old (late 90s)
- Supports only a few shapes, low user-app interaction support [2]



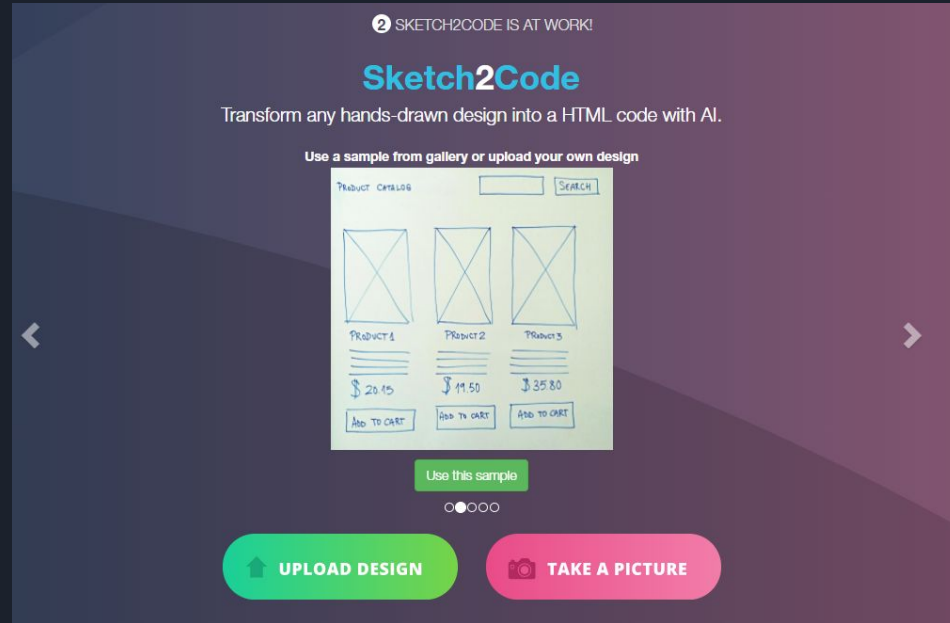
# Competitors: Teleport Vision API

- <https://teleporthq.io/>
- Considered “state-of-the-art sketch to code conversion tool” [2]
- Works offline, using photos of hand-drawn UIs and detecting atomic UI elements
  - Adjusts for issues such as lighting and skew that occur with photographs
- Supports “21 classes of hand-drawn UI element sketches” [2]
- Works for both mobile and web design [1]
- vs. Doodle2App
  - In classifying a set of 712 samples, had a 17.4% accuracy rate vs. Doodle2App’s 93.9%



# Competitors: Sketch2Code

- <https://www.microsoft.com/en-us/ai/ai-lab-sketch2code>
- Microsoft AI Lab project
- Can upload or take a photo to convert to HTML
- Uses Computer Vision API for object detection and OCR
- Web-based, for web design [2]





# Competitors: Overview

	Web design	Mobile design	UI design method
Doodle2App	•	✓	Hand-drawn (digital), Upload (through Pixel2App)
SILK	✓	•	Hand-drawn (stylus)
Teleport	✓	✓	Click 'n drag
Sketch2Code	✓	•	Hand-drawn (pen and paper)

Doodle2App is the only (recent) of the above that puts the designing and converting in the same space so that things can be done “live”, taking several steps out of the traditional wireframing process.



# Features

- The main goal of Doodle2App is to help streamline UI design more into the overall app development process. In order to do this, the code produced must be accurate and usable.
- With this project, we hope to expand on Doodle2App by creating the following:
  - A tool that can analyse and test the generated Android code
  - From that, work on a way to improve the accuracy of the generated code



# Customers & Users

- A potential game changer in the wireframe process
  - Wireframes used to communicate with clients regarding how the UI is supposed to work, but it is a long process that requires many steps, all of which require client involvement [2]
  - Doodle2App would condense and streamline it, acting much as SILK was intended in giving designers “the freedom to quickly sketch rough design ideas and to test the designs by interacting with them.” [2]
- Given how there is a mobile app for everything these days, the list of possible customers and users is endless
  - However, could most benefit companies that deal with a high volume of clients, as well as smaller companies with more limited resources and budgets
- Potential representative customers include actual UI designers who could provide feedback





# Risks

- Limited mobile testing experience
  - Mitigation: Many available resources online as well as in social circle
  - $p_R(40\%) * E_R(10) = \text{Risk Exposure: 4hrs}$
- Getting access to representative customers for feedback due to unknown availability, leading to delays
  - Mitigation: Plan, contact, and schedule in advance
  - $p_R(20\%) * E_R(10) = 2\text{hrs}$
- Dependence on project mentor for feedback and Q&A
  - Mitigation: Plan, contact, and schedule in advance
  - $p_R(20\%) * E_R(5) = \text{Risk Exposure: 1hr}$



# References

1. “AI-Wired Front-End Development Platform,” *teleporthq.io*. [Online]. Available: <https://teleporthq.io/>. [Accessed: 08-Sep-2020].
2. J. A. Landay, *SILK: Sketching Interfaces Like Krazy*, 1996. [Online]. Available: <http://www.cs.cmu.edu/~landay/research/publications/CHI96/video.html>. [Accessed: 08-Sep-2020].
3. J. DaSilva, “Complete Guide to Creating Mobile App Wireframes,” 24-Feb-2020. [Online]. Available: <https://medium.com/thinking-design/complete-guide-to-creating-mobile-app-wireframes-28283d12a090>. [Accessed: 07-Sep-2020].
4. S. Mouhian and C. Csallner, “Doodle2App: Native app code by freehand UI sketching,” in *Proc. 7th IEEE/ACM International Conference on Mobile Software Engineering and Systems (MOBILESoft), Tool Demos and Mobile Apps Track*, 2020.
5. “Sketch2Code,” Microsoft AI Lab. [Online]. Available: <https://www.microsoft.com/en-us/ai/ai-lab-sketch2code>. [Accessed: 08-Sep-2020].



# Questions