CIS4930/CIS6930 Special Topics: Human-Centered Input Recognition Algorithms

Project #2: Extend a Member of the $-Family

Project Overview:

This project goal will be to extend your **Project #1** from this course in some way. A list of suggested extensions is provided below. The first milestone is the project **proposal**, which must be approved by me before you begin. For the **final deliverables**, you will present **a live demo** and **run offline recognition tests** of the algorithm, as well as exploring how **user behavior** affects recognition performance. You will ultimately hand in all updated **source code**, **recognition logs**, and a set of **presentation** slides. All groups will **present your final demos** in class. This hand-out provides detail on the **proposal** and the **final deliverables**.

Project #2 Proposal

Goals and Details:

The goals for you in preparing your proposal for Project #2 are the following:

a) choose at least one aspect of Project #1 to extend (see suggested list below);
b) prepare a set of slides about your proposed extension; and
c) present your proposed extension to the class.

a. Choose an Extension. The list in **Figure 1** provides some suggestions of ways you could extend Project #1 for Project #2. You should **choose at least one** to explore for Project #2. Some of them, like supporting **multistroke** datasets, require using a multistroke algorithm, so think carefully about the extent of what you propose. If you would like to propose anything **not** on this list, you and/or your project group **must meet with me** (e.g., during office hours) before submission to ensure your idea is on the right track; those who do not do so will not be graded.

- address a limitation of $1, $N, or $P
- use a different algorithm (e.g., Protractor, $N, $P, other $-family…)
- collect a new dataset (e.g., other gesture types…)
- support multistroke datasets (e.g., MMG, other public datasets, your own…)
- do a different type of analysis (e.g., user-independent recognition accuracy, GECKO, GREAT, confusion matrix…)

Figure 1. Suggested extensions for Project #2.

b. Prepare a Set of Slides. Prepare a set of slides presenting your proposed extension. A **template** for this proposal is provided on Canvas; you **must** use this template and please do not alter it in any way besides **editing the red text prompts**. The proposal should focus on **WHAT** you want to extend (Slide 2), **WHY** it will be an interesting extension (Slide 3), and what you think your project **OUTCOME** will be (Slide 4).

c. Present to the Class. Each group will sign up for 1 timeslot on either **March 28th** or **March 30th** to present your proposal to the class. Your presentations must be at minimum **2 minutes** and at maximum **4 minutes**. All group members must be present and participate fully in the presentation to receive full credit. To streamline the presentations, we will run the slides from the class computer based on your submissions to Canvas. **No changes may be made after submission before your live presentation, or a late penalty will be incurred.**

Next steps: Please do not start your Project #2 efforts until you have received an official approval from me. I will approve your Project #2 Proposals as soon as possible after class ends on March 30th. The schedule for the remainder of Project #2 is listed at the end of this hand-out.

Submission

For the project proposal, you should submit **only** your set of slides to the appropriate Canvas assignment (as one **.ppt** or **.pptx** file).

Grading

The Project #2 Proposal will be graded out of **5 points**, which is roughly equivalent to half of one part of Project #1. Grading for the proposal will include the following components [5 pts]: (1) submission of slides in required format / template [1 pt], (2) WHAT you are extending [1 pt], (3) WHY it will be interesting [1 pt], (4) what you think your OUTCOME will be [1 pt], and (5) quality and clarity of presentation [1 pt]*. Items will be graded as follows:

- 0 = not present
- ½ = present, but not correct, not clear, and/or not complete
- 1 = present and correct, clear, and complete

*Note: item #5 above may be graded separately for each group member.

I strongly recommend **practicing** your presentation for time. To be fair to all students in the class, **groups will be cut off** if necessary after going over 4 minutes.

Dis/approval of your project proposal will not affect your proposal grade, but you may be required to resubmit new slides if your first proposal is not approved.

Project #2 Final Deliverables

Goals and Details:

The goals for you in preparing the final deliverables for Project #2 are the following:

a) submit any source code, logfiles, datasets, and/or analysis that changed for Project #2;
b) prepare a set of slides about your Project #2 demo and results; and
c) present your final Project #2 demo and results to the class.

a. Submit all Project #2 Materials. Depending on the extension(s) you proposed for Project #2, you may have changed **source code** for your live demo, offline recognition tests, or data collection app; you may have generated new **logfiles** from new recognition tests; you may have collected a new **dataset**; or you may have conducted new **analysis**; etc. For any and all of these components, submit the appropriate and relevant materials. See a guide on what to submit at the end of this hand-out. See Project #1 hand-outs for guidance on formatting of each type of component. All files should be submitted in one **.zip** for this component.

b. Prepare Final Slides. Prepare a set of slides presenting your **final results for Project #2**. A **template** slide deck is provided on Canvas; you **must** use this template and please do not alter it in any way besides **editing the red text prompts**. Fill in the relevant components based on the extension(s) you proposed and executed for Project #2. Focus on the **new elements**, not the elements which may have remained the same from Project #1.

c. Present to the Class. Each group will sign up for 1 timeslot on either **April 18th, April 20th,** or **April 25th** to present your final demo and results to the class. Your presentations must be at minimum **6 minutes** and at maximum **9 minutes**. All group members must be present and participate fully in the presentation to receive full credit. To streamline the presentations, we will run the slides from the class computer based on your submissions to Canvas. **No changes may be made after submission before your live presentation, or a late penalty will be incurred.**

Submission

For this part of the project, you should submit to the appropriate Canvas assignment:

(1) a **README** file **(.txt)**,
(2) your **presentation slides (.ppt** or **.pptx)**, and
(3) any other **relevant** materials (see part (a), **.zip**).

The **README** should contain a **list of any relevant materials** that have been changed since Project #1 for your Project #2 (e.g., for part (a)). All source code must be zipped and labeled clearly. For all source code changes, you should also submit a video in **.mp4** format that demonstrates the required functionality—ask me if you have questions about what to include here! As in prior assignments, any videos should clearly show all group members in the picture-in-picture video screen (see Zoom's documentation for information on how to use it for screen recording). Start your video with the source code folder visible; show you clicking to open it, run it, etc. We should be able to open your **source code** in any plain text editor after unzipping the file; your code must include **comments**.

Grading

The Project #2 Final Deliverables will be graded out of **20 points**, which is roughly equivalent to two parts of Project #1. Grading for the final deliverables of Project #2 will include the following components:

(a) **presentation and slides** [8 pts]: (1) following assigned presentation structure [1 pt], (2) performance of live demo [2 pts], (3) match between published recognition results and your own recognition results (where applicable) [2 pts], (4) clarity of descriptions and results [1 pt], and (5) quality and clarity of presentation [2 pts]*.
(b) other **relevant materials** [10 pts]: divided roughly equally between the relevant components you must submit for your project extension (e.g., 2 pts for live demo, 2 pts for offline recognition, 2 pts for dataset, etc.). See the table at the end of this hand-out for what you will likely need to submit.

*Note: item #5 for the presentation and slides above may be graded separately for each group member.

I strongly recommend **practicing** your presentation for time. To be fair to all students in the class, **groups will be cut off** if necessary after going over 9 minutes.

There will be an additional 2 points earned for submitting the README, presentation slides, and other materials as required, for a total of 20 points. All items listed above will be graded as follows:

- 0 = not present
- ½ or 1 = present, but not correct, not clear, and/or not complete
- 1 or 2 = present and correct, clear, and complete

Notes

While you are free to use all available resources to help you with all parts of Project #1, including the relevant research papers, the pseudocode, and reference implementations which are available online, it is expected that **every line of code that appears in your submission will have been written by you and you alone**. DO NOT copy and paste or use sample code as the foundation of your project. We will use auto-grading tools to detect code copying and sharing, and violators will be subject to the UF Honor Code Student Conduct Code violation reporting process (https://sccr.dso.ufl.edu/process/student-conduct-code/).

Project groups have been assigned for this class. If any group communication or working concerns arise during the project, please **contact me ASAP** so I can help.

Project #2 Timeline

The schedule for the remainder of the semester is listed below. All deliverables are due at **3:00pm** on the due date.

- **Proposal** **out:** **Mar 9th** **due:** **Mar 28th** **(presentations in class March 28th & March 30th)**
- In-Class Working Sessions mandatory: April 4th optional: April 6th
- In-Class Working Sessions mandatory: April 11th optional: April 13th
- **Final Deliverables** **out:** **Mar 9th** **due:** **April 18th** **(presentations in class April 18th, April 20th, April 25th)**

Project #2 Extensions & Submissions

This table outlines what we will expect to see submitted or presented based on the kind of extension(s) you propose for Project #2:

	Source Code			Live			Images / Graphs		
Extension	**ALG**	**100**	**DATA**	**Demo**	**Logfile**	**Dataset**	**GRAPH**	**SSHOT**	**TABLE**
Revised Algorithm	✓			✓	✓		✓		
New Algorithm	✓			✓	✓		✓		
Collect New Dataset	[✓]		✓	✓	✓	✓	✓		
Support Multistroke Gestures	✓			✓	✓	✓	✓		
New Analysis: User-Indep.		✓			✓		✓		
New Analysis: GECKO etc.								[✓]	[✓]

Items in [square brackets] **may** be required depending on the extension proposed. See me if you have questions about what to submit based on your extension.

Legend:

- ALG = algorithm
- 100 = random-100 offline recognition testing
- DATA = data collection app
- Live Demo = online / live recognition demo
- Logfile = CSV logfile in format from Project #1
- Dataset = XML gesture files in format from Project #1
- GRAPH = recognition accuracy graph (e.g., Fig 9(a) from $1 paper)
- SSHOT = some screenshot or other output from an analysis tool like GECKO or GREAT
- TABLE = e.g., confusion matrix or other gesture articulation features values

Questions?

If you have any questions or concerns about any part of this project assignment, please post to the discussion board on Canvas or come to my office hours.