Student's Guide to Using Better-ICR

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We have a groups.io reflector to facilitate sharing of news and information, challenges and accomplishments, questions and answers, across the community of students and advisors using Better-ICR. All changes and upgrades to Better-ICR will be announced through that reflector. You can subscribe by sending an email to Better-ICR-Community+subscribe@groups.io .

Better-ICR is a web app that measures your accuracy and response time in decoding individual characters in CW. It keeps track of your past response times and uses that history to influence which character to send next: the characters that you've tended to copy inaccurately or slowly are sent more frequently than the characters you've typically copied quickly and accurately. So you get more practice where you need it most. And as your trouble spots change, Better-ICR adjusts accordingly.

For background information on Better-ICR, see the article I published in the March 2024 issue of Solid Copy (the CWops newsletter): https://cwops.org/wp-content/uploads/2024/03/Solid-Copy_2024_March_FINAL.pdf. The article begins on page 16. Please note that some aspects of the user interface have changed since that article, but the basic operating principles are unchanged.

Even though Better-ICR is designed to follow a step-by-step process, with instructions given at each step, most people who have tried it find it a bit confusing in real time. I suggest you watch this video demonstration of the app before you try running it yourself: https://youtu.be/vlTunhQXWFE .

To start Better-ICR use this url: https://better-icr.herokuapp.com/

Continue with the rest of the audio setup as shown in the demo. Below the Calibration test you'll see "Adaptive Practice Mode" in green characters. Just below that you'll see the Adaptive Gain slider:
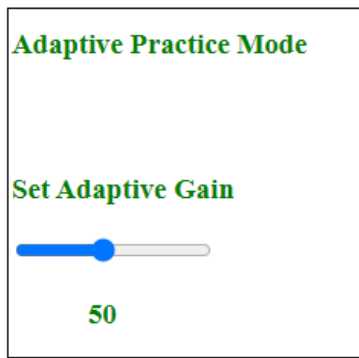
If you're new to Adaptive Practice, leave this slider alone. After you've been using it for a while you may choose to use it to adjust the mix of characters. If you feel Better-ICR is giving you too little practice with your most difficult characters, increase the Adaptive Gain. If you feel it's giving you too little practice with your familiar characters, decrease the Adaptive Gain. After adjusting, save and reload your history, to recalculate the frequency factors.

Custom Characters
Just below the Adaptive Gain control, you'll see the "Custom Characters" button. If you are not a Beginner Level student, you can just skip past this button, using the Standard character set for your ICR practice. If you are a Beginner, see below under Custom Characters for Beginners for information on selecting characters and character sets for your practice.
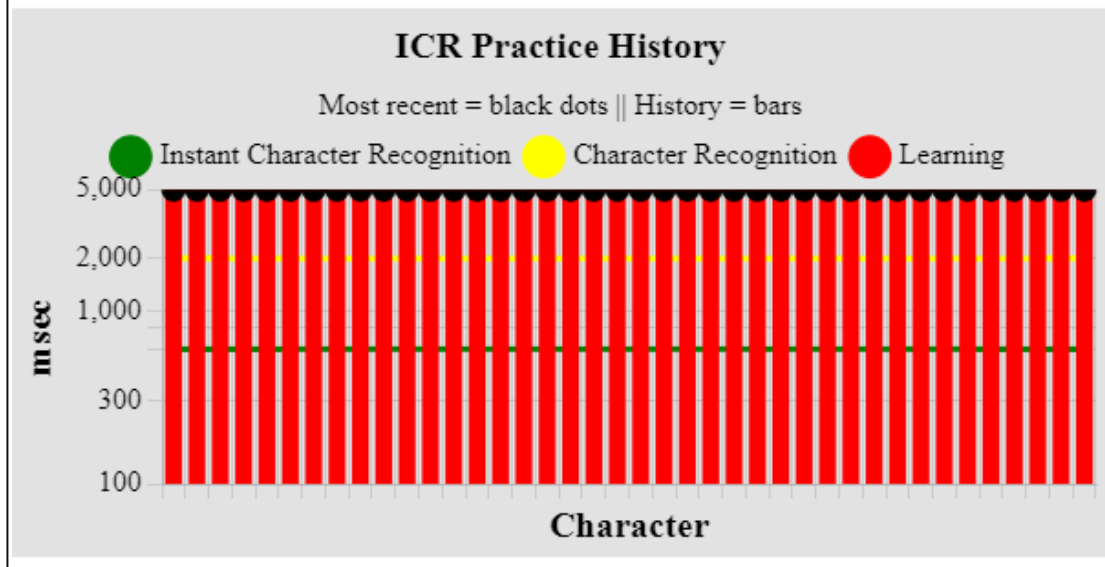
Progress Graph

Below the character and character set checkboxes you will see this:

Click Start button, below, to start or pause. Can also pause by pressing the Escape key.

Start

Most Recent Character:

ICR Practice History

Most recent = black dots || History = bars

● Instant Character Recognition   ● Character Recognition   ● Learning

msec
5,000
2,000
1,000
300
100

Character

See below for information on the <u>Most Recent Character</u> box.

The red bars in the graphic represent your Historic response times for each of the characters. As you improve, the bars will get shorter. The bar heights are calculated as a Weighted Moving Average (wma) of all previous results. The wma is calculated so as to give more weight (i.e., influence) to your recent results and less to your older results.

The black dots (appearing at the tops of the bars as half circles in this particular screen shot) show the Most Recent response times for each character.

The unit for all measurements is milliseconds (msec). Adaptive Practice starts you off with a default of 5000 msec for both Historic and Most Recent values for all characters.

The horizontal yellow line corresponds to a response time of 2000 msec. We believe that if you can recognize and vocalize a character within 2000 msec, you have achieved "Character Recognition," which is a reasonable goal for students at the Beginner Level.

The horizontal green line corresponds to a response time of 600 msec, which represents <u>Instant</u> Character Recognition. For students at the Fundamental and Intermediate Levels, your goal is to get all of your characters near or under this line.
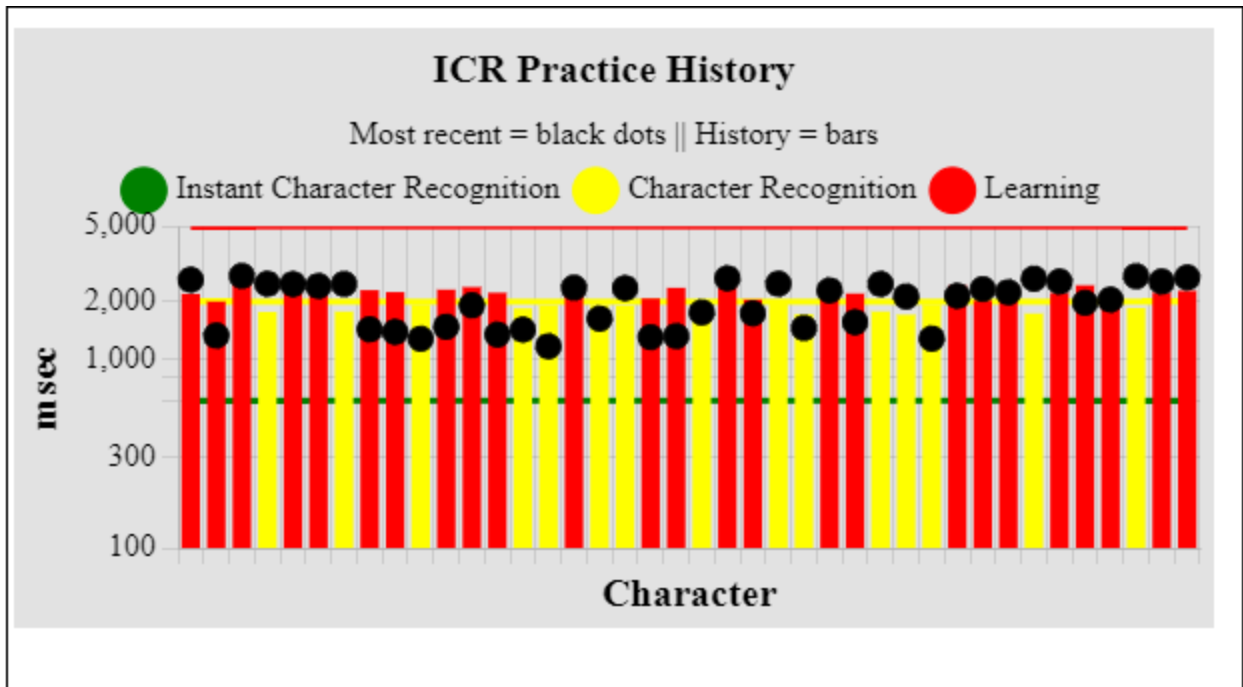
<u>Practice</u>

To start practicing with Better-ICR, simply click "Start." Better-ICR will play you a random character in cw. You should then <u>speak</u> the character aloud as quickly as you can, then take your time to find and click the corresponding key on your keyboard.

This idea of speaking first can be a stumbling block to a new student because most of the cw practice apps you may have used require you to quickly type in your response to whatever code you've just heard. So when Better-ICR plays you some cw, you may reflexively type in the character. If that happens Better-ICR will let you know, discard that result, and continue sending you characters. With Better-ICR , your first response to hearing code needs to be to <u>speak</u> the character out loud. Do that as soon as you recognize the character. Then, you should carefully identify the keyboard key for the character you just identified, then type that character. To re-iterate: hear => speak => type, in that order.

If you are having trouble with this sequence of actions you might try looking away from the keyboard until after you've spoken the character. Or you might need to hold your hands away from the keyboard until after speaking the character. With a little bit of practice the hear/speak/type sequence becomes more natural. Another potential cause is speaking too softly. Try speaking louder; or, if you have a gain control for your mic, try turning it up.

Better-ICR will continue sending characters randomly (but influenced by your history) until you hit the "Pause" button (what was previously the "Start" button – it toggles back and forth). Alternatively you can pause by hitting the Escape key – some people find it easier to do that than to mouse around to the Pause button. In either case you click "Start" to resume.

The graphics for Most Recent and Historic results update in real time as the exercise continues. Here's an example of what a graph might look like as you approach CR. Note that each red bar turns yellow when the history for that character falls below 2000 msec (Character Recognition).

Here's another screen capture which shows how the bars turn green when history for that character falls below 600 msec:
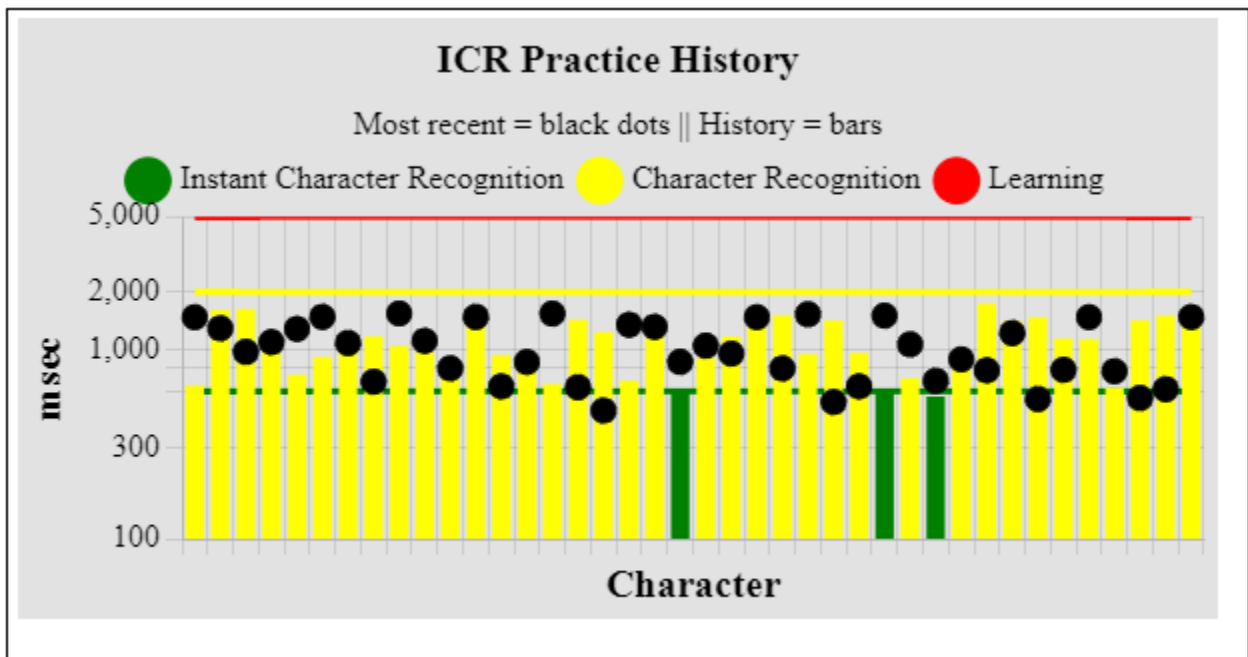

Try not to be distracted by the changing graphics while practicing!

In case you are wondering how an incorrectly copied character fits into the calculation, Better-ICR treats it the same as a character copied correctly, but with a 5000 msec response time.

Inaccuracy has a significant impact on your response time, as it should: you need solid accuracy to achieve ICR.

You'll note that the history bars are unlabeled. So how do you know which characters you're having trouble with? While the app is paused, hover your mouse over a history bar and a tooltip will pop up, showing you the character and the numerical value of your historical response time. See below, circled in blue:
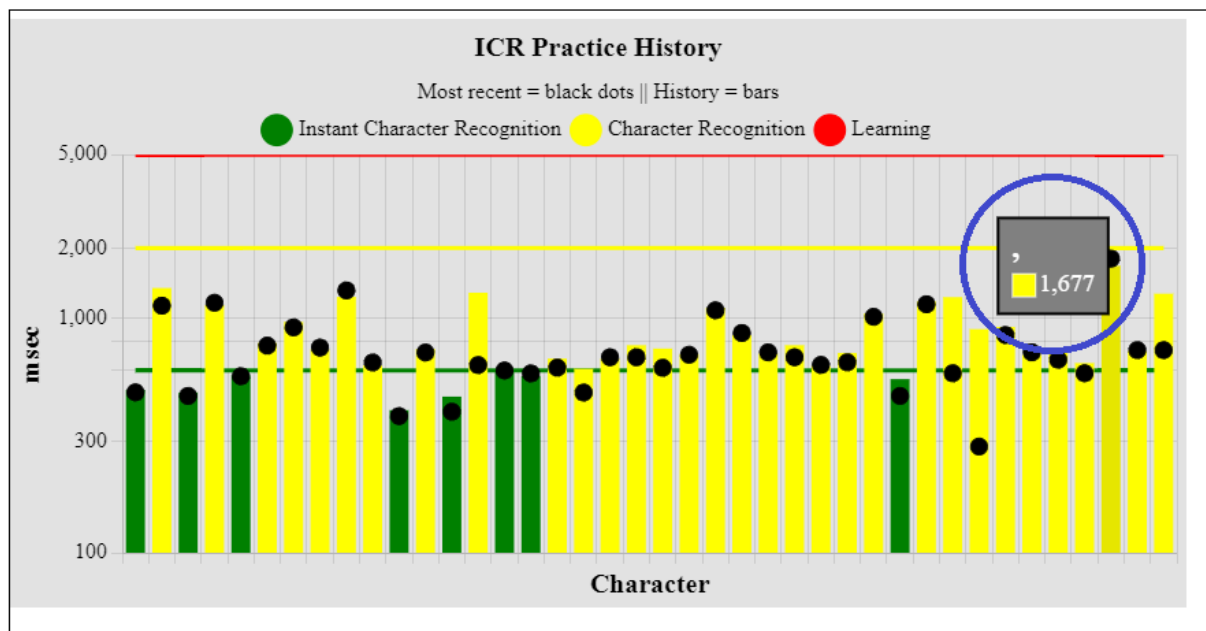
Most Recent Character

The Most Recent Character box just under the Start/Pause button provides immediate feedback on the character you just heard. As soon as you click a key on the keyboard, the character that was just sent appears in that box. If the character is displayed in Green, you decoded it correctly; if in Red, you decoded incorrectly. 500 msec later, when Better-ICR sends the next character, the box goes back to uniform grey.

If the Progress Graph gives you a picture of your practice history, the Most Recent Character box informs you of your present effort.

Saving Your History

It doesn't make a lot of sense to start out with the default initial values every time you start Adaptive Practice. So Better-ICR lets you save your history between runs.

Click the Save button and it will open a file browser to let you choose where to put the history file. The default file name includes a date/time stamp in case you want to save multiple copies. You can rename it if desired, as long as you preserve the ".json" extension. To restore that history at a future time, you click the Choose File button to select the appropriate history file, then click the Restore button to load that history into the app. The history graph will update to where you left off and away you go.

If you have history saved in a prior version of the app, it will still load properly. Go ahead and use it.

Download your Student History Report

If you'd save a copy of the Student History report you normally send to your advisor (see "Advisor History Report", below), click the Save button below "Save Progress Graph from this Run."
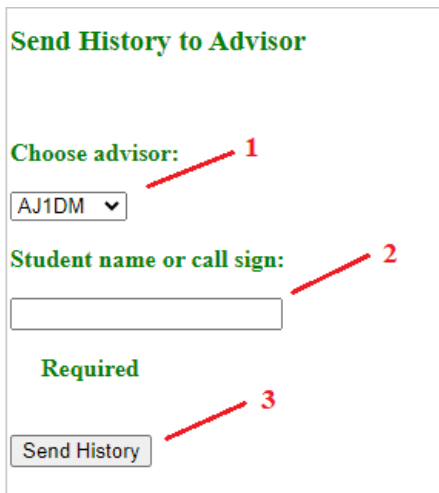

This will allow you to save your report in MS Word format to any desired location on your work station. The report and the default filename includes a time stamp, for your reference. If you don't have MS Word available on your computer, the file is compatible with Open Office, Libre Office, and Google docs.

Practice Timer

Some students get so thoroughly absorbed into Adaptive Practice that they forget to take breaks. Our brains are not wired for sustained concentration - we do better with frequent breaks. So Better-ICR includes a break timer. Whenever you've been practicing continuously for ten minutes the app will give you a friendly suggestion to take a break. You can very easily ignore the reminder if you want, Better-ICR will continue sending code characters, while leaving the friendly suggestion in place. If you want to clear the suggestion, simply pause the app and restart it. However, if you are smart (in my humble opinion) you will take these reminders to heart: take a quick walk or melt some solder or talk to a human being or do something else to give your brain a chance to integrate what you've just been learning. I'm convinced your cw progress will benefit from the break.

Advisor History Report

Better-ICR has a convenient way for you to show your advisor how you are progressing. Just below the Save History button you will see the caption "Send History to Advisor:"

Simply (1) select your advisor from the dropdown, (2) enter your name or call sign in the text box, and (3) click the "Send History" button. Your advisor will receive an email with your current Better-ICR results.

You should see a pop-up telling you Better-ICR successfully sent the report. Give it a bit of time – it takes a while to send an email. If you don't see the pop-up after a reasonable amount of time, let your me know.

Custom Character Sets for Beginners

If you are a Beginner Level student you will start out not knowing all (or maybe any!) of the characters. Since Adaptive Practice most frequently sends you the characters you are recognizing most poorly, that almost guarantees that you will have a miserable experience and learn nothing. Fortunately, Adaptive Practice allows you to select only those characters you are practicing at a given time.

Start by clicking the "Custom Characters" button just below the Adaptive Gain control. This will make the custom characters selection interface visible:

Custom Characters

Custom Character Set Selection:

Standard	ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789../?															
Session 1	A		E			N		T								
Session 2				I		O	S			1 4						
Session 3		D	H	L		R			2 5							
Session 4	C						U									
Session 5				M			W		3 6		?					
Session 6		F					Y									
Session 7		G		PQ					7 9 /							
Session 8	B					V				+						
Session 9		JK				0		8	=							
Session 10						X Z		.	>							
Special	ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789../?=+>!															
Include	ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789../?=+>!															
Exclude	ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789../?=+>!															
Custom	ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789../?															

Prosigns: For \<BT> use "=" | For \<AR> use "+" | For \<SK> use ">"

Suppose you are just starting out so you want to practice only the characters learned in Session 1. In the left-hand column, click on "Standard" to unselect the standard 40-character set – the color of "Standard" shifts from dark green to light green to show that you unselected it. Then click on "Session 1." "Session 1" shifts from light green to dark green to show that it has been selected and the characters in that row (A, E, N, and T) now appear in the "Custom" row. This is what you'll see:

The characters in the "Custom" row (A, E, N, and T) are the only characters Better-ICR will send you. Note that the progress graph just below the custom characters selection interface now includes only four columns, one for each of the characters selected.

When you save your practice history at the end of your session, that file will include your custom character selections. So when you reload and restore that history file, it will restore your custom character selections as well.

When you are ready to move on to Session 2, you can select "Session 2," adding I, O, S, 1, and 4 to the "Custom" row. "Session 1" remains selected, so "Custom" still lists A, E, N, and T. If you would prefer to practice just the characters in Session 2, click on "Session 1" to deselect those characters.

Some advisors recommend modifying the way you introduce characters. For example, some eliminate the prosigns BT, AR, and SK from your practice routine. You can mirror that recommendation in Better-ICR by deselecting those characters. That's what the "Exclude" row is all about. If you click on "=", "+", and ">" (those are the keyboard shortcuts for BT, AR, and SK, respectively), those characters will never be added to the Custom row, no matter which Sessions are selected.

Similarly, if your advisor wants you to start on a character earlier than the Session syllabus suggests, you can click on that character in the "Include" row. Now, no matter what character sets are selected, that character will be included in the "Custom" row.

Here's an example of a hypothetical student who wants to practice Session 1 plus Session 2, but not the numbers "1" and "4", but adding the characters "M" and "W":

```
┌─────────────────────────────────────────────────────────────┐
│ Custom Characters                                            │
│                                                              │
│ Custom Character Set Selection:                              │
│                                                              │
│ Standard  ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789.,/?           │
│ Session 1  A    E           N        T                       │
│ Session 2           I        O    S           1  4           │
│ Session 3     D   H   L        R              2  5           │
│ Session 4   C                    U                           │
│ Session 5             M              W        3  6      ?    │
│ Session 6      F                     Y                       │
│ Session 7       G        PQ                      7 9 /       │
│ Session 8   B                    V                     +     │
│ Session 9        JK                   0        8      =      │
│ Session 10                        X Z          .      >      │
│ Special   ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789.,/?=+>!       │
│                                                              │
│ Include   ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789.,/?=+>!       │
│ Exclude   ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789.,/?=+>!       │
│                                                              │
│ Custom    A   E   I   MNO    ST   W                          │
│                                                              │
│ Prosigns: For <BT> use "=" | For <AR> use "+" | For <SK> use ">"
└─────────────────────────────────────────────────────────────┘
```

As an aid to your understanding, all clickable elements in the interface are green or red: dark if selected and light if unselected. All the words and characters in black are not clickable.

Play around with it for a while and it should make sense.

73 and gl!

de John AJ1DM