Automatic Item Generation and Validation: A Short Course

Software Installation Instructions

1. Install the most recent version of [R](https://www.r-project.org/) (version 4.1.3+ or later versions). R is free and available for Windows, Mac, and Linux operating systems. Download the version of R compatible with your operating system from [here](https://cloud.r-project.org/). If you are running Windows or MacOS, you should choose one of the precompiled binary distributions (i.e., ready-to-run applications) linked at the top of the R Project’s webpage.

2. Once R is installed, download and install [RStudio](https://www.rstudio.com/products/rstudio/download/) (version 8aaa5d47, 2022-03-17+ or later versions). This is a front-end for R that makes it much easier to work with. This software is free and available for Windows, Mac, and Linux platforms.

3. Install the following add-on packages for R. To install the libraries, make sure you have an internet connection and then launch RStudio. Copy the following line of text and paste them in to R's command prompt (located in the window named "Console"):

install.packages(c("devtools", "sna", "network", "igraph"))

4. Install the EGAnet package (version 2.1.1) from Github using the following code:

devtools::install\_github("hfgolino/EGAnet")

5. Before Installing AI-GENIE:

Step 1: Ensure you have access to Reticulate.

AI-GENIE accesses large language models like GPT and Mixtral using an API on python. To run python scripts implicitly in R, you first need to install and load the reticulate package.

install.packages("reticulate")

library(reticulate)

If you don't have miniconda installed in your R/RStudio, please use the reticulate package to install it for you before installing the other packages:

reticulate::install\_miniconda()

Step 2: Create a Conda Environment

Next, it is important that you create a Conda environment, or a are self-contained, isolated space where you can install specific versions of software packages, including dependencies, libraries, and Python versions. **You only need to do this step ONCE**. After a Conda environment is created, you can load the same environment again and again.

In RStudio, run:

venv\_name <- "AIGENIE\_python\_env"

reticulate::conda\_create(envname = venv\_name, python\_version = 3.11)

reticulate::use\_condaenv(venv\_name, required = TRUE)

Step 3: Use your Conda Environment and Install the Correct Package Versions

Now that you've created your Conda environment, it's time to load the environment and install the correct versions of the python package dependancies. In AI-GENIE, we use both OpenAI and Groq APIs, so both of these packages will need to be loaded into the Conda environment. **The Groq package does NOT require a specific version**; however, **the openai package MUST be set to version 0.28.**

In RStudio, run:

reticulate::py\_install("groq", envname = venv\_name)

reticulate::py\_install("openai == 0.28", envname = venv\_name)

Great! Now your Conda environment is all set up!

You do not need to repeat these steps again.

For all future package use, simply load this same pre-made Conda environment.

6. AI-GENIE Installation:

devtools::install\_github("laralee/AI-GENIE")