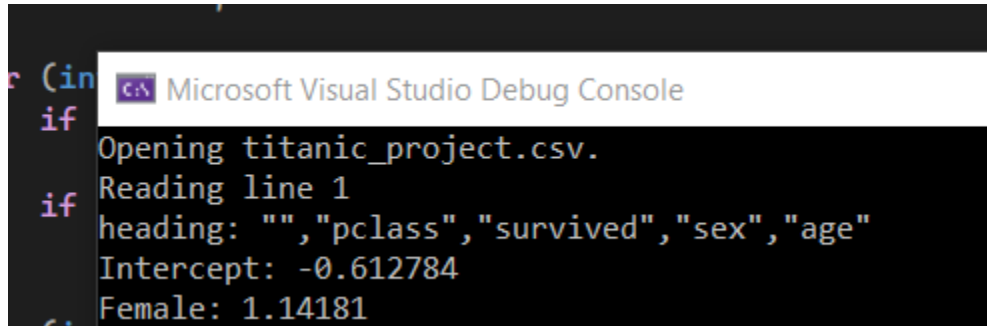


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Portfolio Component 3: ML Algorithms from Scratch

A screenshot of a Microsoft Visual Studio Debug Console window. The window has a dark background with light-colored text. The title bar at the top reads "Microsoft Visual Studio Debug Console". The console shows the following output: "Opening titanic_project.csv.", "Reading line 1", "heading: \"\", \"pclass\", \"survived\", \"sex\", \"age\"", "Intercept: -0.612784", and "Female: 1.14181". To the left of the console, a portion of a code editor is visible, showing code snippets like "(in", "if", and "if".

```
(in  
if  
Opening titanic_project.csv.  
Reading line 1  
if  
heading: "", "pclass", "survived", "sex", "age"  
Intercept: -0.612784  
Female: 1.14181
```

Reproducible research is having data or code available from other research, so others can reproduce the same results in a convenient way (LeVeque 13). This can be applied to a lot of fields like mathematics, neuroscience, and of course computer science. This is important to validating the results of research and having that information more available so research can easily reference past work.

LeVeque explains that there were three types of themes that emerged from a workshop about reproducible research. The first is “changing nature of science as the quantity of available data and processing power drives a shift to computational and data-driven modes of discovery”(LeVeque 14-15). The second is encouraging and defining examples of reproducibility. The third is the amount of tools and practices for reproducibility. From these themes we can see how we can implement reproducible research. Finding common ground in the type of models we use and the language when comparing research. Gunderson and LeVeque also mention that there should be repositories to save data and have mechanisms to organize to have easier access to this research. Gunderson also explains in more detail how to do the same with source code and AI methods (Gunderson 61).

References:

Gundersen, O. E., Y. Gil, and D. W. Aha. “On Reproducible AI: Towards Reproducible Research, Open Science, and Digital Scholarship in AI Publications”. *AI Magazine*, vol. 39, no. 3, Sept. 2018, pp. 56-68.

LeVeque, Randall J., Ian M. Mitchell, and Victoria Stodden. "Reproducible research for scientific computing: Tools and strategies for changing the culture." *Computing in Science & Engineering* 14.04 (2012): 13-17.