

The Authorship Rubric: Credit Where Credit's Due Ido Roll

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What is the meaning of scholarly authorship?

Academics like to collect authorships. This is our Monopoly money, our brownie points, our virtual fan club, the features in our cap. We check our Scholar page obsessively and mud-wrestle over order of authorship. Who should be a first author, a second author, or a last author? In fact, the question is larger : What does being an author on a paper *mean*?

Ask 10 academics, and nine of them will say, "intellectual contribution." Authors are people who make intellectual contributions to the papers. Those who propose novel ideas, identify interesting patterns, shape the work. This makes some sense. However, if this is the case, what about algorithms? Algorithms make increasing contributions to work. They crunch numbers, construct models, make and evaluate predictions, transcribe text and identify linguistic features, analyze data and text, etc. So, when should algorithms be co-authors?

Step 1: Algorithms as tools

The question of authorship is not a new one. We have been applying analytical methods for decades and we credit them by citing papers that introduce these or by naming the methods after its developer. Look at a behavioral science paper and you will find Mr. Bonferroni right there, in the Results section. Perhaps we can do the same for algorithms. They will be credited in the Methods section, together with the other methods used.

Intellectual contributions belong to the masterminds behind the work. We credit theories, we credit data bases, we credit statistical methods as references. We should also credit algorithms similarly.

Step 2: Algorithms as intellectual contributors

Above, I mentioned the common and underdefined term intellectual contribution. Following the same line of reasoning, what is an intellectual contribution? To make intellectual contribution, one needs to impact the essence of the work, its very nature and content. If a student merely transcribes interviews, that student does not make an intellectual contribution. If the student also develops a coding scheme, this student deserves to be on the author list. I would like to introduce the idea of *swapability* as a metric to evaluate contribution. Can I swap Student A with Student B? How will this affect the

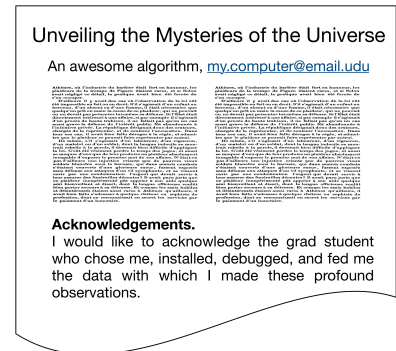


Figure 1: The future of an academic paper?

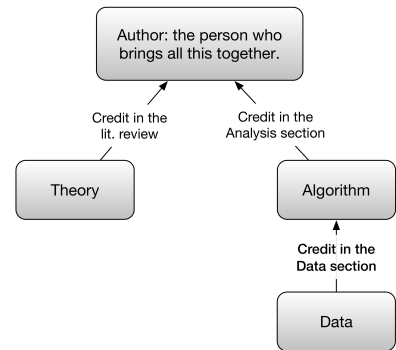


Figure 2: Acknowledge our inspirations

paper? In the example above, the answer is clear: A student who merely transcribes is swappable. But replacing a student who also develops a coding scheme would affect the paper. Thus: Swappable => no intellectual contribution

This criteria makes interesting insertions about algorithms. Simply put, most algorithms are not swappable. Replace your algorithm and you will get different models or findings. Perhaps algorithms are worthy being co-authors after all, as they make distinct intellectual contributions.

Step 3: The authorship rubric

Is it correct for computers to receive the authorship credit, while some people do not? What about the student who does the literature review, or the lab manager who runs a multimillion-dollar operation? What about the person who feeds the algorithm with the data, who cleans the data, or the tech support person? How do we acknowledge their contributions? Academic papers will often be co-authored by a person who happened to say a smart idea a couple of years back but never follow up or even read the paper, but will not credit people who worked daily on the project. How can we give credit where credit is due?

Let us examine how we evaluate other collaborative efforts within our neck of the woods, the academic classroom. We will often use two common tools. The rubric, which highlights the nature of work being done, and group self-assessment, where students describe how individuals within the group contributed to the overall outcome. Along these lines, let me introduce the *authorship rubric*. The authorship rubric is a box that describes who has done what, and to what capacity, on the paper. As an initial suggestion, it should include the following dimensions: vision, leadership, data collection and preparation, analysis, theoretical framework, and writing. Each author receives the recognition that he or she deserves. If certain authors are embarrassed by their little contribution, well, perhaps they should not be included. Accountability, people, accountability. Give credit where credit's due.

Name	Joan Doe (grad student)	Dan Stu (undergrad)	NumberCruncher (algorithm)	Prof Hoff (s
Vision	++	+	-	++
Leadership	+++	-	-	++
Data collection	+++	+++	-	-
Data analysis	+++	+	+++	++
Theoretical framework	++	+++	-	+
Writing	+++	-	-	-

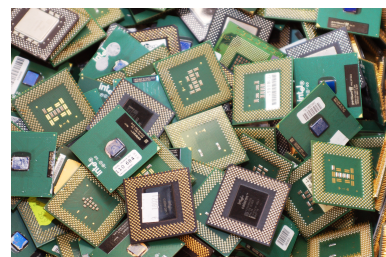


Figure 3: The graveyards are full of indispensable algorithms

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