

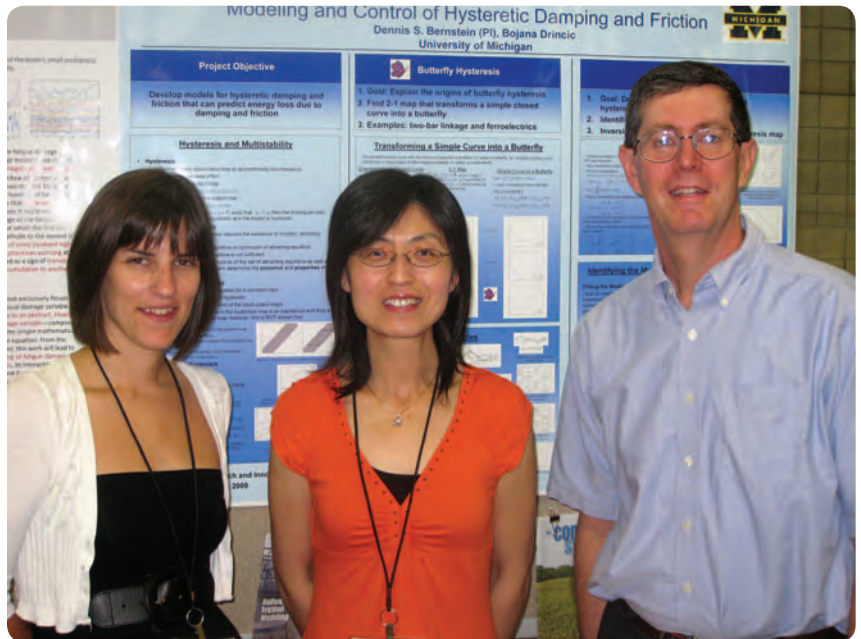
Plagiarize This!

One of the cardinal sins of writing is plagiarism, which means reproducing the words of another writer without attribution. In effect, plagiarism is a form of theft, at least on an intellectual level. The seriousness of plagiarism is difficult to overstate. Plagiarism is thought to be a major ethical breach, and careers in academia and journalism have ended because of it.

It's not uncommon for journals to receive submissions with major portions that are identical to the works of other authors. Editors then need to investigate which party is wronged and which party is responsible. IEEE maintains a Prohibited Authors List, alerting editors to authors who have been found guilty. According to IEEE:

The Prohibited Authors List (PAL) is a collection of names of authors who have been banned from submitting manuscripts to some or all IEEE publications due to a finding of publishing misconduct following a careful and considered review of a complaint by an ad hoc committee of subject expert volunteers. The List provides information about the length of the author's ban and the paper title in which the misconduct was found.

The latest version of PAL has 118 names. This list is like the "no-fly" database maintained by the U.S. Government. Authors whose names appear on PAL cannot publish in IEEE publications for a period ranging from one year to indefinitely.



Bojana Drincic, Jingang Yi, and Dennis Bernstein.

Flagrant cases of plagiarism involve large sections of papers if not entire manuscripts. But plagiarism may also involve only a few sentences, although I haven't seen any attempt to define the number of consecutive unattributed words that would earn this label. Despite my best effort to be original, I'd be surprised if any consecutive sequence of n words in this essay is original, at least for n up to a half dozen or so. As n increases, I would expect the probability of being original to increase quickly to one. With regard to recognizing "unattributed reuse," it's surprisingly easy for an author to detect overlap between his or her writing and another author's paper—even if it's only a sentence or two.

In fields where the amount of prose is orders of magnitude beyond

what we're accustomed to in technical fields, I would imagine that it takes special care and effort to avoid inadvertently "reusing language," which can result in "extensive overlap between passages" by "borrowing language without clear attribution," as euphemistically put by various authorities. Historians, for example, work from a huge number of sources, and I would expect that it's crucial to accurately describe past events without introducing errors or changes in nuance. Creating wording that is both original and accurate is challenging.

I was surprised to read on Wikipedia that some novels by famous authors are actually written by ghostwriters. In these cases, it's arguable whether plagiarism has occurred. At

most universities, this practice would lead to dismissal.

Beyond viewing plagiarism as unattributed word sequences, the latest Wikipedia states that “Plagiarism is not only the mere copying of text, but also the presentation of another’s ideas as one’s own, regardless of the specific words or constructs used to express that idea.” This definition extends the concept of plagiarism well beyond quoting without quotes. As a form of intellectual theft, this insidious kind of plagiarism is potentially more harmful than the mere reproduction of a sequence of words.

Another variant of plagiarism goes by the name “self-plagiarism.” Logically, this is a contradiction in terms; I can no more plagiarize myself—in terms of words or ideas—than I can steal my own car. (Whether or not I do that every time I drive to work is a philosophical question.) The impetus behind this extension is presumably to discourage a behavior that plagues scholarly publication, namely, the publication of overlapping manu-



Gene Morelli of NASA Langley and Dennis Bernstein.

scripts. Some journals thus require that the “rules” of plagiarism apply to the author’s own work. That is, if the paper you submit has any verbiage that is identical to the verbiage in another one of your papers, then that material must be quoted as if it were written by another author.

IEEE is concerned with journal submissions that are identical to conference papers. Apparently, this is common practice in some IEEE Societies. Given the page constraints under which CDC papers are written, as well as the standards of *IEEE Transactions on Automatic Control*, it’s

unlikely CSS authors would submit an unmodified conference paper to our flagship journal. Nevertheless, to help ensure that this could not happen and to stress that a conference publication is a stepping stone to the higher scrutiny of journal publication, the transactions states the need for “value added” in its fine print. This magazine is another story entirely; the huge number of revisions that are typical for *IEEE Control*

Systems Magazine articles precludes all but the most remote resemblance to anything ever written.

So what is the best way to avoid inadvertent plagiarism? “Originality of thought” is certainly helpful. As we invent ideas and apply them in novel ways, it becomes increasingly unlikely that our work—and the words we use to describe it—will bear any resemblance to what’s already out there. And if I inadvertently plagiarize my own work, I have only myself to blame.

Dennis S. Bernstein



Contour Integration

Vannevar Bush (1890–1974) is one of the key figures in twentieth-century American science, and although he was not a “computer scientist,” his name will appear several times in this book. He first became interested in analog computing in 1912 when, as a student at Tufts College, he invented a machine he called a “profile tracer,” which was used to plot ground contours. Bush described this machine in his autobiography *Pieces of the Action* in his characteristically folksy way:

It consisted of an instrument box slung between two small bicycle wheels. The surveyor pushed it over a road, or across a field, and it automatically drew the profile as it went. It was sensitive and fairly accurate. If, going down a road, it ran over a manhole cover, it would duly plot the little bump. If one ran it around a field and came back to the starting point, it would show within a few inches the same elevation as that at which it had started.

Tucked away in Bush’s master’s thesis of 1913 is a slightly blurred photograph taken a year earlier, showing a youthful and gangly Bush pushing his profile tracer across undulating turf. With its pair of small bicycle wheels and a black box filled with mechanical gadgetry, it captures perfectly the Rube Goldberg world of analog computing with its mixture of technology, gadgetry, eccentricity, inventiveness, and sheer panache.

—*Computer: A History of the Information Machine*,
by Martin Campbell-Kelly and William Aspray, Westview Press, 2004, pp. 53, 54.