

Assessing the Impact of NIST's Forensic Publications and Collaborations

Susan Makar
susan.makar@nist.gov

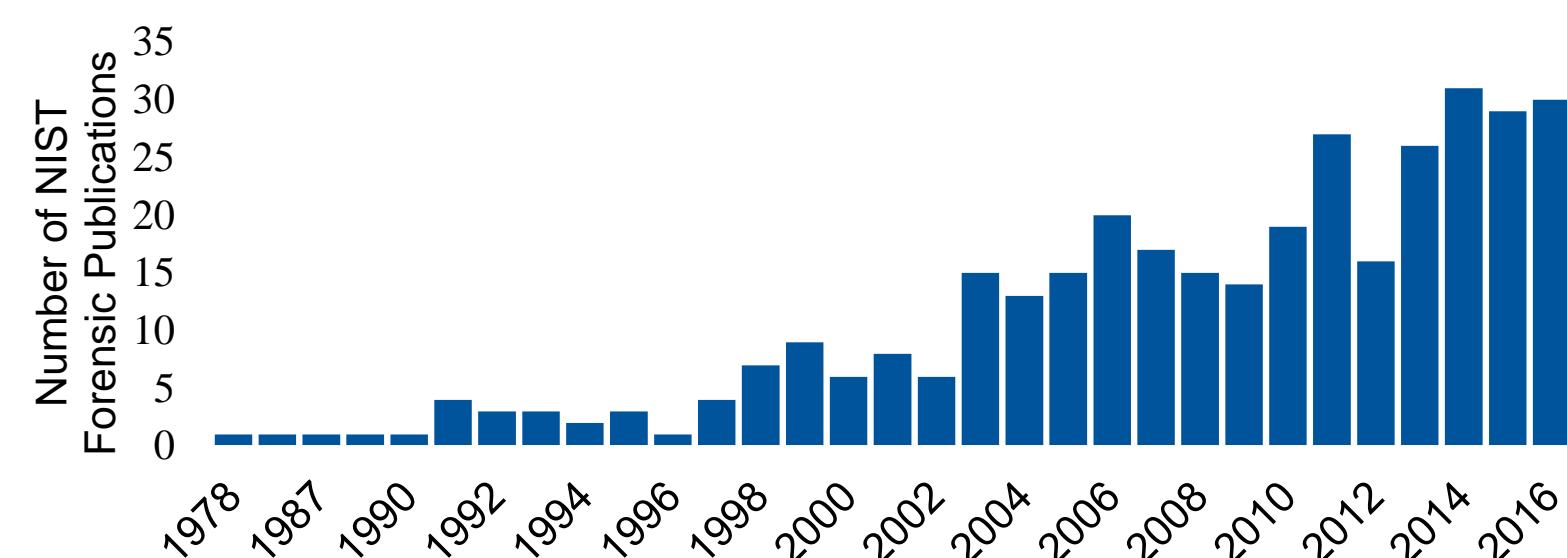
Amanda Malanowski
amanda.malanowski@nist.gov

Introduction

The Information Services Office (ISO) at NIST analyzed the impact of NIST's peer-reviewed forensic journal literature through citation analysis and network visualizations. ISO's study informs the forensic research community where NIST has had some of the greatest impact. It updates and expands upon the work ISO shared at the Forensics@NIST 2014 symposium.

Overview of NIST Research Publications

This analysis, based on a *Web of Science (WoS)* search, yielded 348 NIST forensic publications in 42 different research areas and 106 journal venues since 1978.



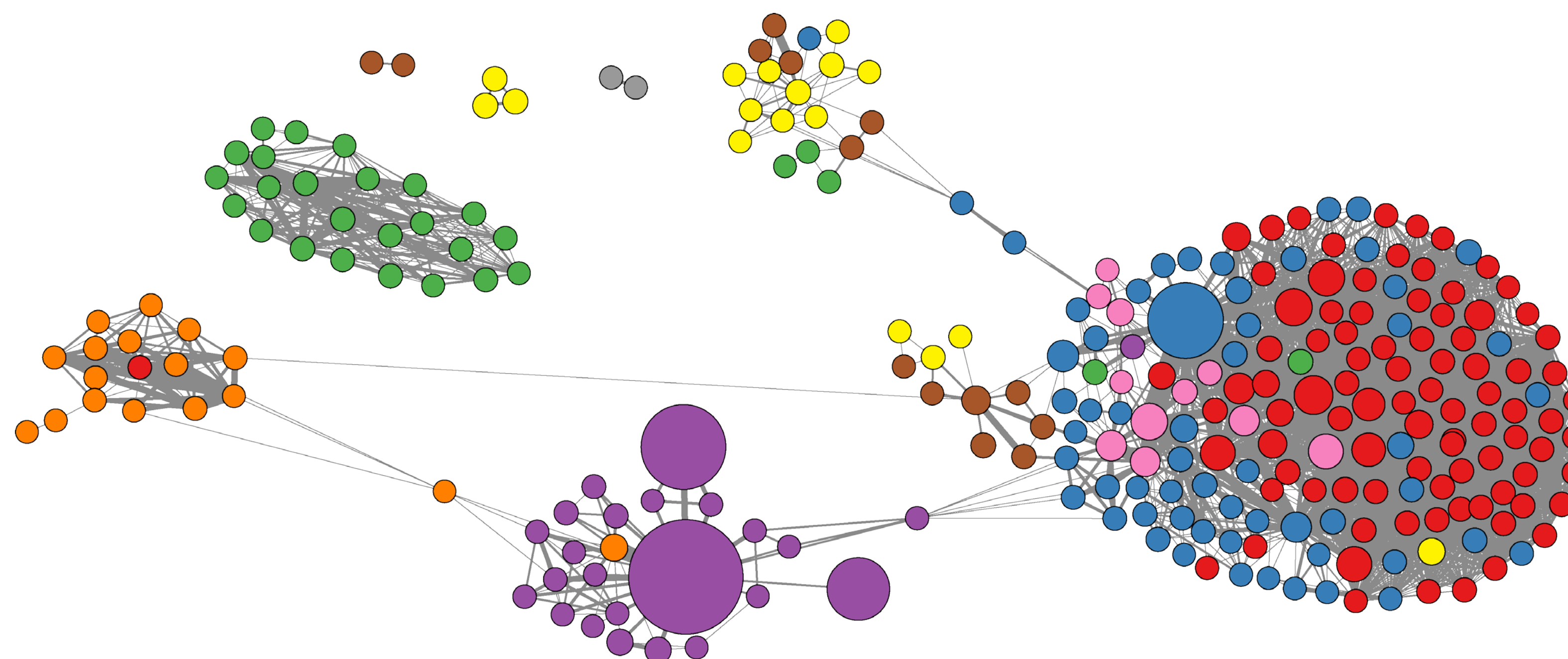
Methodology

A *WoS* database search identified NIST forensic publications for the years 1978-2016. ISO's complex *WoS* search strategy used a variety of forensics-related keywords and other terms. The search included publications in the peer-reviewed literature (journals) while excluding most conference proceedings papers and other non-journal literature.

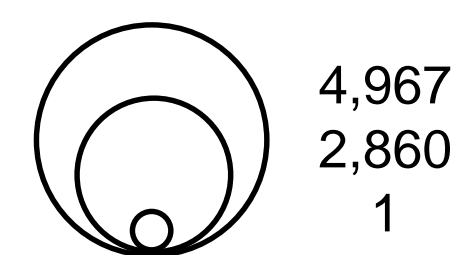
The network graph was created using *Sci²* to extract the co-author network from the *WoS* search results. The network was then visualized using *Gephi*. Subdisciplines for the co-author network were assigned manually by studying the underlying papers for each author and identifying their predominant research field.

Collaborations within Forensic Disciplines

This co-author network shows the collaboration between authors who have published two or more papers and their research fields. Each node represents an author, NIST or non-NIST, who has co-authored with a NIST scientist, and is sized to represent the number of citations the author has received. The largest node represents P. J. Phillips from NIST with 35 authored works and 4,967 citations.



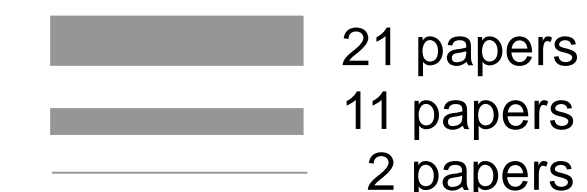
Number of Times Cited



Forensic Subdisciplines



Number of Co-Authored Papers



The colors represent different forensic subdisciplines. The most prevalent subdisciplines are population genetics (34%) and DNA fingerprinting (22%). This diagram shows the close relationship and frequent collaborations of authors in the fields of population genetics, DNA fingerprinting, and Standard Reference Materials (SRMs). Authors in ballistics, nuclear forensics, biometric recognition, and fire forensics co-author within their own field.

Impacts

NIST forensic publications have been cited by authors from 128 different countries. They are cited most frequently by authors in China (1,889 papers), the United Kingdom (482 papers), and Germany (396 papers).



Conclusions and Recommendations

Forensics at NIST crosses many disciplines from legal medicine and chemistry to computer science and biometric recognition. NIST's research and the resulting publications continue to have proven impact on the forensic research community as demonstrated through ISO's study and findings. NIST forensics-related publications have been cited 11,141 times since 1978.

The ability to capture each and every NIST-authored paper related to forensic science remains a challenge as was the case in ISO's original 2014 study. However, broadening the scope of forensics research in 2016 gives a richer picture of forensics at NIST. In future studies, ISO will assess the impact of NIST-authored forensics papers not published in peer-reviewed journals.