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**Patrick Juola, Ph.D.**  
**Professor**  
**Mathematics & Computer Science**  
**School of Liberal Arts**  
[juola@mathcs.duq.edu](mailto:juola@mathcs.duq.edu)

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## **Academic Background**

- Ph.D. University of Colorado at Boulder, Boulder, CO, Computer Science, 1995
- M.S. University of Colorado at Boulder, Boulder, CO, Computer Science, 1991
- B.S. The Johns Hopkins University, Baltimore, MD, Electrical Engineering and Mathematics (double), 1987

## **Certifications**

- Certificate (MS equivalent) in Cognitive Science -- University of Colorado at Boulder, 1993 , Boulder, CO.

## **Memberships**

- The Association for Linguistic Evidence (TALE), 2010-Present
- American College of Forensic Examiners Institute (ACFEI), 2009-Present
- Association for Computers and the Humanities (ACH), 2009-Present
- Association for Literary and Linguistic Computing (ALLC), 2005-2009
- International Quantitative Linguistics Association (IQLA), 2001-Present
- Linguistic Society of America (LSA), 1994-Present
- Association for Computing Machinery (ACM), 1989-Present

## **WORK EXPERIENCE:**

### **Academic Experience**

- Professor of Computer Science, Duquesne University (2014 - Present), Pittsburgh, Pennsylvania.
- Director, Evaluating Variations in Language Laboratory, Duquesne University (2010 - Present), Pittsburgh, Pennsylvania.
- Associate Professor of Computer Science, Duquesne University (2004 - 2014), Pittsburgh, Pennsylvania.
- Assistant Professor of Computer Science, Duquesne University (1998 - 2004), Pittsburgh, Pennsylvania.
- Tutor, St. Hugh's and Lincoln Colleges, Oxford University (1996 - 1998), Oxford, United Kingdom.
- Postdoctoral Research Associate, Department of Experimental Psychology, Oxford University (1995 - 1998), Oxford, United Kingdom.
- Instructor, Colorado Free University (1993 - 1994), Denver, Colorado.
- Instructor, University of Colorado at Boulder (1990 - 1994), Boulder, Colorado.

### **Non-Academic Experience**

#### **National**

- Founder and Director of Research, Juola & Associates (2010 - Present), Pittsburgh, Pennsylvania. A Pennsylvania-based startup specializing in forensic text analysis.
- Adjunct Scientist, Human Language Technology Center of Excellence, the Johns Hopkins University (2008 - Present), Baltimore, Maryland.
- Visiting Scientist, CERT/CC, Carnegie Mellon University (1999 - 2001), Pittsburgh, Pennsylvania.
- Staff Scientist, PGP, Inc. (1995 - 2001), Boulder, Colorado.
- Software Engineer, Brain and Cognitive Sciences Dept., MIT (1990 - 1990), Cambridge, Massachusetts.
- Technical Consultant, AT&T Bell Laboratories (1987 - 1990), Holmdel, New Jersey.

### **International**

CIRCA Scholar, Canadian Institute for Research Computing in the Arts, University of Alberta (2011 - Present), Alberta, Canada.

Contributing Editor, PCSense Magazine (1995 - 1997), Oxford, United Kingdom.

NSF Fellow, Electrotechnical Laboratory (1991 - 1991), Tsukuba, Japan.

### **TEACHING:**

#### **Courses Taught**

##### **Courses taught, but not in the Schedule:**

Graduate Courses Taught:

- CPMA 515 (Advanced Discrete Mathematics)
- CPMA 531 (Programming Language: Java)
- CPMA 532 (Data Structures)
- CPMA 535 (Computer Systems)
- CPMA 535 (Software Engineering)
- CPMA 564 (Cryptography)
- CPMA 580 (Artificial Intelligence/Cognitive Science)
- CPMA 585 (Computer Security)
- GRBUS 462 (Topics in Digital Forensics)

Undergraduate Courses Taught:

- COSC 100 (Elements of Computer Science)
- COSC 101 (Introduction to Visual Basic)
- COSC 150 (Computer Programming: C++)
- COSC 220 (Computer Organization and Assembly Language)
- COSC 210 (Data Structures)
- COSC 325W (Operating Systems and Computer Architecture)
- COSC 410 (Artificial Intelligence)
- COSC 425 (Computer Graphics)
- COSC 435 (Theory of Programming Languages)
- COSC 450 (Computer Networks)
- COSC 460 (Computer Security)
- COSC 494 (SPTPC: Neural Networks)
- COSC 495 (SPTPC: Authorship Attribution)

#### **Teaching-Other**

##### **Student Assign-Supervised Research (GRAD)**

2014 - James Overly

2013 - Xuan Li

2013 - Amanda Kroft

2013 - Julia Jacovino

2011 - Darren Vescovi

2008 - Mengjia Zhao

2007 - Ipek Tetikoglu

2006 - Shelly C. Lukon

### **INTELLECTUAL CONTRIBUTIONS:**

#### **Grid (counts of research categories)**

Category	DBS	CTP	LPS	Total
Articles in Refereed Journals	27	3		30
Publications of Non-refereed or Invited Papers	1			1

Books, Monographs, Compilations, Manuals, Supplements, Chapters, Cases, Readings	11		3	14
Presentations of Refereed Papers	107	1		108
Presentations of Non-Refereed Papers	18	3		21
Other Research, Non-refereed		2		2

## Refereed Articles

- Juola, Patrick , "Measuring Style: Document Analysis and Forensic Stylometry." *The Forensic Examiner* (2016):
- Fridman, Lex , Ariel Stolerman, Sayandeep Acharya, Patrick Brennan, Patrick Juola, Rachel Greenstadt, Moshe Kam, "Multi-Modal Decision Fusion for Continuous Authentication." *Computers & Electrical Engineering* 41. (2015): 142–156.
- Juola, Patrick , "The Rowling Case: A Proposed Standard Analytic Protocol for Authorship Questions." (in press) *Digital Scholarship in the Humanities* (2015):
- Noecker Jr., John , Michael Ryan, and Patrick Juola, "Psychological Profiling through Textual Analysis." *Literary and Linguistic Computing* 28. (2013): 382-387.
- Juola, Patrick , "Stylometry and Immigration: A Case Study." *Journal of Law & Policy* 21. (2013): 287-298.
- Fridman, Alex , Ariel Stolerman, Sayandeep Acharya, Patrick Brennan, Patrick Juola, Rachel Greenstadt, Moshe Kam, "Decision Fusion for Multi-Modal Active Authentication." *IT Professional* 15. (2013): 29-33.
- Juola, Patrick , John I Noecker Jr., Ariel Stolerman, Michael V Ryan, Patrick Brennan, Rachel Greenstadt, "Keyboard Behavior Based Authentication for Security." *IT Professional* 15. (2013): 8-11.
- Juola, Patrick , "Large-Scale Experiments in Authorship Attribution." *English Studies* 93. (2012): 275-283.
- Juola, Patrick , John I. Noecker Jr, and Michael Ryan, "Authorship Attribution and Optical Character Recognition Errors." *Traitement Automatique des Langues (TAL)* 53. (2012): 101-127.
- Juola, Patrick , "JGAAP: A System for Comparative Evaluation of Authorship Attribution." *Proceedings of the Chicago Colloquium on Digital Humanities and Computer Science* 1. (2009):
- Juola, Patrick , "Killer Applications in Digital Humanities." *Literary and Linguistic Computing* 23. (2008): 73-85.
- Pothos, Emmanuel and Patrick Juola, "Characterizing Linguistic Structure with Mutual Information." *British Journal of Psychology* 98. (2007): 291-304.
- Juola, Patrick , "Becoming Jack London." *Journal of Quantitative Linguistics* 14. (2007): 145-147.
- Juola, Patrick , John Sofko, and Patrick Brennan, "A Prototype for Authorship Attribution Software." *Literary and Linguistic Computing* 21. (2006): 169-178.
- Juola, Patrick and Harald Baayen, "A Controlled-Corpus Experiment in Authorship Identification by Cross-Entropy." *Literary and Linguistic Computing* 20. (2005): 59-67.
- Juola, Patrick , "Review of Hay's Probabilistic Linguistics." *Computational Linguistics* 30. (2004):
- Juola, Patrick , "Review of Raymond's The Art of UNIX Programming." *Literary and Linguistic Computing* (2004):
- Juola, Patrick , "One Word, One Module?" *Cortex* 39. (2003): 135-137.
- Juola, Patrick , "The Time Course of Language Change." *Computers and the Humanities* 37. (2003): 77-96.
- Pothos, Emmanuel M. and Patrick Juola, "Linguistic Structure and Short Term Memory." *Behavioral and Brain Sciences* 24. (2001): 138-139.
- Juola, Patrick , "Double Dissociations and Neurophysiological Expectations." *Brain and Cognition* 43. (2000): 257-262.
- Plunkett, Kim and Patrick Juola, "A Connectionist Model of English Past Tense and Plural Morphology." *Cognitive Science* 23. (1999): 463-490.
- Juola, Patrick , "Review of Bennett's A Course in Generalized Phrase Structure Grammar." *Language* 74. (1998):
- Juola, Patrick , "Measuring Linguistic Complexity: The Morphological Tier." *Journal of Quantitative Linguistics* 5. (1998): 206-213.
- Juola, Patrick , "On Psycholinguistic Grammars." *Grammars* 1. (1998): 15-31.
- Juola, Patrick and Jonathan Reid, "Civilian Cryptography and the Promise of Decentralization." *Soldier-Scholar, a Journal of Contemporary Military Thought* III. (1996):
- Uchida, Yuriko and Patrick Juola, "Understanding and Generation of English Articles and Knowledge of Real Usage in a Text." *Bulletin of the Electrotechnical Laboratory* 57. (1993):
- Uchida, Yuriko and Patrick Juola, "English Text Generation from Contextual Representation Structure Based on Real Text Data Dependent Knowledge [No. 1]." *Bulletin of the Electrotechnical Laboratory* 55. (1991):

Juola, Patrick and Hitoshi Isahara, "An Efficient KWIC System for Japanese Text." Bulletin of the Electrotechnical Laboratory 55. (1991):

Juola, Patrick, "Machine Translation and Lojban." Ju'i Lobypli 8. (1989):

## **Invited Articles/Reviews**

Juola, Patrick, "One Word, One Module?" Cortex 39. (2003): 135-137.

Juola, Patrick, "Encapsulating Architecture and Encapsulating Processes." Behavioral and Brain Sciences 25. (2003): 759-759.

## **Books**

Juola, Patrick and Steve Ramsay, Mathematics for Humanists. Oxford: Oxford University Press [A], 2013.

Juola, Patrick, Principles of Computer Organization and Assembly Language. Upper Saddle River, NJ: Prentice-Hall, 2007.

## **Monograph**

Juola, Patrick, Authorship Attribution. Delft: NOW Publishing, 2008.

## **Book Chapters**

### **Non-Refereed**

Juola, Patrick, "Connectionism.", Experimental and Quantitative Linguistics (LINCUM Handbooks in Linguistics 23). Munchen: H. H. Langlin Press, 2009.

Juola, Patrick, "Future Trends in Authorship Attribution.", Research Advances in Digital Forensics - III. Heidelberg: Springer [B], 2007.

Juola, Patrick, "Language Identification.", Encyclopedia of Language and Linguistics, 2nd Edition (ELL2). Elsevier, 2005.

### **Refereed**

Vescovi, Darren and Patrick Juola, "Analyzing Stylometric Approaches to Author Obfuscation.", Research Advances in Digital Forensics VII. Heidelberg: Springer [B], 2011.

Juola, Patrick, "Assessing Linguistic Complexity.", Language Complexity: Typology, Contact, Change. Amsterdam: John Benjamins Press, 2008.

Juola, Patrick, "Questioned Electronic Documents: Empirical Studies in Authorship Attribution.", Research Advances in Digital Forensics II. Heidelberg: Springer [B], 2006.

Plunkett, Kim and Patrick Juola, "A connectionist model of English past tense and plural morphology.", Connectionist Psycholinguistics. Westport, CT: Ablex Publishing, 2001.

Juola, Patrick and Kim Plunkett, "Why double dissociations don't mean much.", Exploring Cognition: Damaged Brains and Neural Networks. Philadelphia, PA: Psychology Press/Taylor Francis, 2000.

Juola, Patrick, "Corpus-based acquisition of transfer functions using psycholinguistic principles.", New Methods in Language Processing. London: UCL Press [D], 1997.

## **Book Supplements**

Juola, Patrick, "Ethics for Computer Scientists.", Correspondence course for the University of Colorado at Boulder, School of Continuing Education. University of Colorado at Boulder, 1995.

Juola, Patrick, "Cryptography and Privacy.", Course packet and associated workbook for the Colorado Free University. Colorado Free University, 1994.

## **Presentation of Refereed Papers**

### **International**

Juola, Patrick (2017). Detecting Contract Plagiarism via Stylometric Methods. Plagiarism across Europe and Beyond, Brno, Czech Republic.

Juola, Patrick and George K. Mikros. (2017). Cross-linguistic correlations in lexical complexity; an approach to cross-linguistic authorship attribution. 13th Biennial Conference of the International Association of Forensic Linguists, Porto, Portugal.

Juola, Patrick, Sean Vinsick, and Michael V. Ryan. (2016, August). Are Most People On Twitter Introverts? A Distributional Analysis of Personality Types on Twitter. QUALICO 2016, Trier, Germany.

Juola, Patrick and George Mikros. (2016, July). Authorship Attribution Using Different Languages. Digital Humanities 2016, Kraków, Poland.

Juola, Patrick (2016, June). Did Aunt Prunella Really Write That Will? A Simple and Understandable Computational Assessment of Authorial Likelihood. Workshop on Legal Text, Document, and Corpus Analytics - LTDC 2016, San Diego, California.

Juola, Patrick and George Mikros. (2016, June). Cross-Linguistic Stylometric Features: A Preliminary Investigation. JADT 2016, Nice, France.

Juola, Patrick (2016, March). The Psycholinguistics of Constructed Languages: Authorship Attribution. Ponying the Slovos Symposium, Coventry, Great Britain.

Juola, Patrick (2015, August). Industrial Uses for Authorship Analysis. 2nd Int. Conf. on Mathematics and Computers in Sciences and Industry (MCSI 2015), Sliema, Malta.

Juola, Patrick (2015, July). Error Treatment in Forensic Authorship Attribution. International Symposium on Forensic Science Error Management, Washington, District of Columbia.

Juola, Patrick (2014, December). Forensic Authorship Attribution. 2014 IAFL Pre-Conference Workshop, Sfax, Tunisia.

Juola, Patrick and Elizabeth DeCarlo. (2014, December). Direct Estimates of Authorial Likelihood Using Bayesian Statistics and Psychological Taxonomies. Forensic Linguistics/Language and the Law: Foundations and Future Avenues Conference (FLFFA 2014), Sfax, Tunisia.

Ryan, Michael, Patrick Juola, and John Noecker Jr.. (2014, December). Author Diarization Through Cluster Analysis. Forensic Linguistics/Language and the Law: Foundations and Future Avenues Conference (FLFFA 2014), Sfax, Tunisia.

Stamatatos, Efstathios, Benno Stein, Walter Daelemans, Patrick Juola, Alberto Barrón-Cedeño, Ben Verhoeven, Miguel A. Sanchez-Perez (2014, September). Overview of the Authorship Identification Task at PAN 2014. Proceedings of PAN/CLEF 2014, Sheffield, United Kingdom.

Juola, Patrick (2014, July). The Rowling Case: A Proposed Standard Analytic Protocol for Authorship Questions. Digital Humanities 2014, Lausanne, Switzerland.

Hasanaj, Belinda, Erin Purnell, and Patrick Juola. (2014, May). Cross-linguistic Transference of Authorship Attribution. QUALICO 2014, Olomouc, Czech Republic.

Juola, Patrick and Efstathios Stamatatos. (2013, September). Overview of the Author Identification Task. PAN/CLEF 2013, Valencia, Spain.

Juola, Patrick (2013, June). A Critical Analysis of the Ceglia/Zuckerberg Email Authorship Study. 11th Biennial Conference on Forensic Linguistics/Language and Law of the International Association of Forensic Linguists (IAFL 2013), Mexico City, Mexico.

Juola, Patrick (2013, June). An Information-Theoretic Reevaluation of the Complexity of US Supreme Court Decisions. 11th Biennial Conference on Forensic Linguistics/Language and Law of the International Association of Forensic Linguists (IAFL 2013), Mexico City, Mexico.

Acharya, Sayandeep, Alex Fridman, Patrick Brennan, Patrick Juola, Rachel Greenstadt, Moshe Kam (2013, March). User Authentication Through Biometric Sensors and Decision Fusion. 47th Annual Conference on Information Sciences and Systems (CISS 2013), Baltimore, Maryland.

Juola, Patrick, John Noecker Jr., Ariel Stoleran, Michael V. Ryan, Patrick Brennan, Rachel Greenstadt (2013, January). A Dataset for Active Linguistic Authentication. Ninth IFIP WG 11.9 International Conference on Digital Forensics, Orlando, Florida.

Juola, Patrick (2012, December). Automatic Analysis of Gender Variation in Language Via Conjecture Generation. Research Foundations for Understanding Books and Reading in the Digital Age: E/Merging Reading, Writing, and Research Practices INKE 2012 Birds-of-a-Feather Gathering, Havana, Cuba.

Juola, Patrick (2012, October). Authorship and Active Deception. 3rd European Conference of the International Association of Forensic Linguists (IAFL), Porto, Portugal.

Juola, Patrick (2012, September). An Overview of the Traditional Authorship Attribution Subtask. Proceedings of PAN 2012, Rome, Italy.

Juola, Patrick (2012, April). Detecting Stylistic Deception. EACL 2012 Workshop on Computational Approaches to Deception Detection, Avignon, France.

Juola, Patrick (2012, April). JGAAP 5.3.0: A System for General Purpose Text Classification Experiments. EACL 2012 Workshop on Computational Approaches to Deception Detection, Avignon, France.

Juola, Patrick (2011). Report on Authorship Attribution Subtask. CLEF 2011 (Conference on Multilingual and Multimodal Information Access Evaluation), Amsterdam, Netherlands.

Juola, Patrick (2011). Stylometric Authorship Attribution and Verification. American College of Forensic Examiners Institute 2011 Conference (ACFEI 2011), Branson, Missouri.

Juola, Patrick and Darren Vescovi. (2011). Stylometric Approaches to Author Obfuscation: An Empirical Study. Seventh Annual IFIP WG 11.9 International Conference on Digital Forensics, Orlando, Florida.

Coufal, Christopher and Patrick Juola. (2010). Authorship Discontinuities of El Ingenioso Hidalgo don Quijote de la Mancha as detected by Mixture-of-Experts. Digital Humanities 2010, London, United Kingdom.

Juola, Patrick (2010). Psycholinguistically Plausible Events and Authorship Attribution. Digital Humanities 2010, London, United Kingdom.

Juola, Patrick (2010). Distant Reading and Mapping Genre Space via Conjecture-based Distance Measures. Digital Humanities 2010, London, United Kingdom.

Kirschenbaum, Matthew, Patrick Juola, and Phil Saban. (2010). Wargames in a Digital Age. Digital Humanities 2010, London, United Kingdom.

Juola, Patrick and Ashley Bernola. (2009). Conjecture Generation in the Digital Humanities. Digital Humanities 2009, College Park, Maryland.

Juola, Patrick, John Noecker, Jr, Mike Ryan and Sandy Speer. (2009). JGAAP4.0 - A Revised Authorship Attribution Tool. Digital Humanities 2009, College Park, Maryland.

Juola, Patrick (2009). Cross-linguistic Transference of Authorship Attribution, or Why English-Only Prototypes Are Acceptable. Digital Humanities 2009, College Park, Maryland.

Juola, Patrick (2009). 20,000 Ways Not to Do Authorship Attribution - and a Few that Work. 2009 Biennial Conference of the International Association of Forensic Linguists, Amsterdam, Netherlands.

Juola, Patrick (2009). Guessing at the Content of a Million Books. INKE 2009: Research Foundations for Understanding Books and Reading in the Digital Age, Victoria, British Columbia.

Noecker Jr, John and Patrick Juola. (2009). Cosine Distance Nearest-Neighbor Classification for Authorship Attribution. Digital Humanities 2009, College Park, Maryland.

Noecker Jr., John, Mike Ryan, Patrick Juola, Amanda Sgroi, Stacey Levine, Benjamin Wells (2009). Close Only Counts in Horseshoes and...Authorship Attribution? Digital Humanities 2009, College Park, Maryland.

Ryan, Michael and Patrick Juola. (2009). Authorship Attribution, The Large and Small Effect Sizes of Divergence as Classification. Digital Humanities 2009, College Park, Maryland.

Sinclair, Stefan, Dave Beavan, Susan Brown, Stephen Downie, Carlos Fiorentino, Patrick Juola, Peter Organisciak, Geoffrey Rockwell, Susan Schreibman & Kirsten Uszkalo (2009). TADA Research Evaluation Exchange: Winning 2008 Submissions. Digital Humanities 2009, College Park, Maryland.

Juola, Patrick, John Noecker, Mike Ryan and Mengjia Zhao. (2008). JGAAP 3.0 - Authorship Attribution for the Rest of Us. Digital Humanities 2008, Oulu, Finland.

Zhao, Mengjia and Patrick Juola. (2008). A Chinese Version of an Authorship Attribution Analysis Program. Digital Humanities 2008, Oulu, Finland.

Juola, Patrick (2006). Questioned Electronic Documents: Empirical Studies in Authorship Attribution. Second Annual Conference of the IFIP Working Group 11.9 2006, Orlando, Florida.

Juola, Patrick (2006). Killer Applications in Digital Humanities. Proceedings of Digital Humanities 2006, Paris, France.

Lukon, Shelly and Patrick Juola. (2006). A Context-Sensitive Computer-Aided Index Generator. Proceedings of Digital Humanities 2006, Paris, France.

Juola, Patrick (2005). Compression-based Analysis of Language Complexity. Proceedings of Approaches to Complexity in Language, Helsinki, Finland.

Juola, Patrick (2005). Language Change and Historical Inquiry. Proceedings of XVth International Conference of the Association for History and Computing (AHC 2005), Amsterdam, Netherlands.

Juola, Patrick (2005). A Prototype for Authorship Attribution Studies. ACH/ALLC 2005, Victoria, British Columbia.

Juola, Patrick (2005). Towards an Automatic Index Generation Tool. ACH/ALLC 2005, Victoria, British Columbia.

Juola, Patrick and John Sofko. (2004). Proving and Improving Authorship Attribution. Proceedings of Canadian Symposium for Text Analysis (CaSTA-04), Hamilton, Ontario.

Juola, Patrick (2004). On Composership Attribution. ALLC/ACH 2004, Goteborg, Sweden.

Juola, Patrick (2004). Ad-hoc Authorship Attribution Competition. ALLC/ACH 2004, Goteborg, Sweden.

Juola, Patrick (2003). Becoming Jack London. Proceedings of the Fifth International Conference on Quantitative Linguistics (QUALICO-2003), Athens, Georgia.

Juola, Patrick and Harald Baayen. (2003). A Controlled-Corpus Experiment in Authorship Identification by Cross-Entropy. Proceedings of ACH/ALLC 2003, Athens, Georgia.

Juola, Patrick (2002). Lexical Change as a Factor in Linguistic Change. Measuring Lexical Variation and Change: A Symposium on Quantitative Sociolexicology, Leuven, Belgium.

Juola, Patrick (2002). The Case for Humanities Mathematics: When Computing Doesn't Work. COCH/COSH 2002 Meeting, Toronto, Ontario.

Juola, Patrick (2002). The Significance of Lexical Choice in Language Change. Workshop on Quantitative Investigations in

Theoretical Linguistics (QITL), Osnabruck, Germany.

Juola, Patrick (2001). The Time Course of Language Change. Proceedings of ACH/ALLC 2001, New York City, New York.

Juola, Patrick (2001). The Case for Humanities Mathematics: When Computing Doesn't Work. Humanities Computing Curriculum, Nanaimo, British Columbia.

Juola, Patrick (2000). A Linear Model of Complexity (And Its Flaws). Proceedings of the Fourth International Conference on Quantitative Linguistics (QUALICO-2000), Prague, Czech Republic.

Juola, Patrick (2000). The Rate of Language Change. Proceedings of the Fourth International Conference on Quantitative Linguistics (QUALICO-2000), Prague, Czech Republic.

Juola, Patrick (1999). Double Dissociations and Neurological Expectations. Proceedings of the Tenth Annual Conference on Theoretical and Experimental Neuropsychology (TENNET X), Montreal, Quebec.

Pothos, E. M., Patrick Juola, and N. C. Ellis. (1999). Linguistic Structure and Short-Term Memory. Twenty-first Annual Conference of the Cognitive Science Society (CogSci-99), Vancouver, British Columbia.

Juola, Patrick, Todd M. Bailey, and Emmanuel M. Pothos. (1998). Theory-Neutral System Regularity Measurements. Proceedings of the Twentieth Annual Conference of the Cognitive Science Society (CogSci-98), Madison, Wisconsin.

Juola, Patrick and Kim Plunkett. (1998). Why Double Dissociations Don't Mean Much. Proceedings of the Twentieth Annual Conference of the Cognitive Science Society (CogSci-98), Madison, Wisconsin.

Juola, Patrick and Kim Plunkett. (1998). The Rise and Fall of English Inflectional Morphology. Proceedings of the Twentieth Annual Conference of the Cognitive Science Society (CogSci-98), Madison, Wisconsin.

Juola, Patrick (1998). Cross-Entropy and Linguistic Typology. New Methods in Language Processing 3, Sydney, Australia.

Juola, Patrick (1997). A Numerical Analysis of Cultural Context in Translation. Proceedings of the Second European Conference on Cognitive Science, Manchester, United Kingdom.

Juola, Patrick (1997). What Can We Do With Small Corpora? Document Categorization via Cross-Entropy. Proceedings of the Workshop on Similarity and Categorization (SimCat 97), Edinburgh, United Kingdom.

Juola, Patrick (1997). Reinventing Behaviorism. Proceedings of the Eighth Ireland Conference on Artificial Intelligence, Derry, United Kingdom.

Juola, Patrick (1997). Measuring Linguistic Complexity: The Morphological Tier. Proceedings of the Third International Conference on Quantitative Linguistics (QUALICO-97), Helsinki, Finland.

Juola, Patrick (1996). Phonetic Ambiguity: Approaches, Touchstones, Pitfalls, and New Directions. Proceedings of the Fifth Annual Conference on the Cognitive Science of Natural Language Processing (CSNLP 5), Dublin, Ireland.

Juola, Patrick (1996). Isolated-Word Confusion Metrics and the PGPfone Alphabet. Proceedings of New Methods in Language Processing 2, Ankara, Turkey.

Juola, Patrick and Philip Zimmermann. (1996). Whole-Word Phonetic Distances and the PGPfone Alphabet. Proceedings of the International Conference on Spoken Language Processing (ICSLP-96), Philadelphia, Pennsylvania.

Juola, Patrick (1995). Psychologically Plausible Machine Translation via the Marker Hypothesis. 1995 Annual Meeting of the Linguistic Society of America, New Orleans, Louisiana.

Juola, Patrick (1994). A Psycholinguistic Approach to Corpus-Based Machine Translation. Third International Conference on the Cognitive Science of Natural Language Processing (CSNLP 3), Dublin, Ireland.

Juola, Patrick, Chris Hall, and Adam Boggs. (1994). Corpus-based Morphological Segmentation by Entropy Changes. Third International Conference on the Cognitive Science of Natural Language Processing (CSNLP 3), Dublin, Ireland.

Kumar, Vijay, Anton Dahbura, Patrick Juola and Fred Fisher. (1989). An Approach for the Yield Enhancement of Programmable Gate Arrays. IEEE International Conference on Computer-Aided Design, Santa Clara, California.

### **Local**

Fisher, F. H., A. T. Dahbura, V. P. Kumar and Patrick Juola. (1988). A Defect-Tolerant, Laser-Programmable, GaAs Logic Array. AT&T Symposium on Fault Tolerance, Allentown, Pennsylvania.

### **National**

Juola, Patrick and Patrick Brennan. (2011). Conjecture Generation as a Tool for Corpus Analysis. American Association for Corpus Linguistics Conference (AACL 2011), Atlanta, Georgia.

Juola, Patrick, Michael V. Ryan, and Michael Mehok. (2011). Geographically Localizing Tweets via Stylometric Analysis. American Association for Corpus Linguistics Conference (AACL 2011), Atlanta, Georgia.

Reinholt, Kevyn, Shelly Lukon, and Patrick Juola. (2011). Evaluating Back-of-the-Book Indices. Exploring the Boundaries and Applications of Corpus Linguistics, Tuscaloosa, Alabama.

Reinholt, Kevyn, Patrick Juola, and Shelly Lukon Fitzgerald. (2011). A System for Creating Back-of-the-Book Indexes.

American Association for Corpus Linguistics Conference (AACL 2011), Atlanta, Georgia.

Ryan, Michael and Patrick Juola. (2011). Age or Identity: A Comparison of Stylistic Similarity. Exploring the Boundaries and Applications of Corpus Linguistics, Tuscaloosa, Alabama.

Juola, Patrick and Darren Vescovi. (2010). Empirical Evaluation of Authorship Obfuscation Using JGAAP. Proceedings of AISec '10 (The 3rd ACM Workshop on Artificial Intelligence and Security), Chicago, Illinois.

Juola, Patrick (2008). Authorship Attribution: What Mixture-of-Experts Says We Don't Yet Know. American Association of Corpus Linguistics 2008, Provo, Utah.

Lukon, Shelly and Patrick Juola. (2006). A Context-Sensitive Computer-Aided Index Generator. Proceedings of Canadian Symposium for Text Analysis (CaSTA-06) "Breadth of Text", Fredricton, New Brunswick.

Juola, Patrick (2003). Temporal Factors Underlying Linguistic Change. 2003 Annual Meeting of the Linguistic Society of America, Atlanta, Georgia.

Juola, Patrick and Todd M. Bailey. (1999). Quantifying Quasi-Regularity. 1999 Annual Meeting of the Linguistic Society of America, Los Angeles, California.

Juola, Patrick and James Martin. (1994). Psycholinguistic Universals and Statistical Machine Translation. 1994 Post-NIPS Workshop: Statistical and Neural Network Approaches to Natural Language Processing, Vail, Colorado.

### **Regional**

Juola, Patrick and John I. Noecker Jr.. (2014, October). Inferring Self-Esteem from Keyboard Behavior. Chicago Colloquium on Digital Humanities and Computer Science (DHCS), Evanston, Illinois.

Noecker Jr, John and Patrick Juola. (2014, October). Stylometric Identification of Manic-Depressive Illness. Chicago Colloquium on Digital Humanities and Computer Science (DHCS), Evanston, Illinois.

Baker, Jeffrey, John I. Noecker Jr, and Patrick Juola. (2012, November). First-Language Identification of Spoken Language via Lexical Bigrams and Intersection Distance using the JGAAP Framework. Proceedings of the Chicago Colloquium on Digital Humanities 2012 (DHCS 2012), Chicago, Illinois.

Juola, Patrick (2012, November). Using the Google Ngram Corpus to Measure Dialectical and Cultural Differences. Proceedings of the Chicago Colloquium on Digital Humanities 2012 (DHCS 2012), Chicago, Illinois.

Juola, Patrick (2012, November). A Case Study in Authorship Attribution. Proceedings of the Chicago Colloquium on Digital Humanities 2012 (DHCS 2012), Chicago, Illinois.

Gray, Christine and Patrick Juola. (2011). Personality Identification through Textual Analysis. Chicago Colloquium on Digital Humanities and Computer Science (DHCS), Chicago, Illinois.

Reinholt, Kevyn, Shelly Lukon, and Patrick Juola. (2010). A Machine-Aided Back-of-the-Book Indexer. DHCS 2010, Chicago, Illinois.

Juola, Patrick (2009). Mapping Genre Space via Random Conjectures. Chicago Colloquium on Digital Humanities and Computer Science (DHCS), Chicago, Illinois.

Noecker Jr, John, Mike Ryan, and Patrick Juola. (2009). The Stylometric Report Markup Language. Chicago Colloquium on Digital Humanities and Computer Science (DHCS), Chicago, Illinois.

Juola, Patrick and Mike Ryan. (2008). Authorship Attribution, Similarity, and Noncommutative Divergence Measures. Chicago Colloquium on Digital Humanities and Computer Science (DHCS), Chicago, Illinois.

Juola, Patrick (2008). JGAAP: A System for Comparative Evaluation of Authorship Attribution. Chicago Colloquium on Digital Humanities and Computer Science (DHCS), Chicago, Illinois.

Juola, Patrick (2008). Automating Conjecture in the Digital Humanities. BOAF talk at Chicago Colloquium on Digital Humanities and Computer Science (DHCS), Chicago, Illinois.

Noecker, John and Patrick Juola. (2008). An Empirical Study of Linear Separability on Authorship Attribution Feature Spaces. Chicago Colloquium on Digital Humanities and Computer Science (DHCS), Chicago, Illinois.

Kireyev, Kirill and Patrick Juola. (2007). Improving Web Access for Users with Aphasia with Language Technologies. 2007 Coleman Institute Conference: The State of the World & The State of the Science in Cognitive Disability and Technology, Westminster, Colorado.

Juola, Patrick (1998). Text Distortion as a Measure of Communicative Function and Complexity. Fourth Conference on Conceptual Structure, Discourse, and Language (CSDL-4), Atlanta, Georgia.

Hall, Chris, Patrick Juola, and Adam Boggs. (1994). MORPHEUS: A Tool for the Lexical Analysis of Corpora for Morpheme Segmentation. Mid-America Linguistics Conference, Lawrence, Kansas.

Juola, Patrick (1994). Data Mining and Marker Words: A Psycholinguistic Approach to Machine Translation. Mid-America Linguistics Conference, Lawrence, Kansas.



## Presentation of Non-Refereed Papers

### International

Juola, Patrick, Patrick Brennan, Michael Ryan, Alex Fridman, and Rachel Greenstadt (2013, September). Active Authentication Demonstration. 2013 Biometric Consortium Conference and Technology Expo, Tampa, Florida.

Juola, Patrick, Patrick Brennan, and Michael Ryan. (2013, September). Personality and Demographic Information Demonstration. 2013 Biometric Consortium Conference and Technology Expo, Tampa, Florida.

Juola, Patrick (2012, October). Stylometry and Immigration: A Case Study. Proceedings of the Brooklyn Law School Workshop on Authorship Attribution, New York City, New York.

Juola, Patrick (2011). The Tyranny of Assumptions. Seminar at the University of Alberta, Edmonton, Canada-Alberta.

Juola, Patrick (2011). Fishing the Ocean: Lessons from Large-Scale Experiments in Stylometry. Seminar at the Senate House, University of London, London, United Kingdom.

Juola, Patrick (2011). Fishing the Ocean: Lessons from Large-Scale Experiments in Stylometry. Seminar at the University of Leeds, Leeds, United Kingdom.

Juola, Patrick (2010). Course materials for Authorship Attribution and Stylometry masterclass. 22nd European Summer School in Logic, Language, and Information (ESSLI 2010), Copenhagen, Denmark.

Juola, Patrick (2002). Applications of Cross-Entropy in Text Analysis. Seminar at the Max Planck Institute for Psycholinguistics, Nijmegen, Netherlands.

### Local

Juola, Patrick (2014, April). Forensic Stylometrics and Linguistic Evidence. Seminar at the University of Tennessee, Knoxville, Tennessee.

Juola, Patrick (2014, April). Why Rowling Can't Hide: How Language Patterns Reveal Authors and Plagiarists. Seminar at the University of Tennessee, Knoxville, Tennessee.

Juola, Patrick (2014, February). Inferring Metadata: It's Not Just About Web Pages. Seminar at the University of Illinois at Urbana-Champaign, Champaign, Illinois.

Juola, Patrick (2013, October). Tigre. AlphaLab Demo Day & Technology Preview, Pittsburgh, Pennsylvania.

Juola, Patrick (2004). Defense Expert Witness. Infragard Moot Court, at the Forensic Institute, Duquesne University, Pittsburgh, Pennsylvania.

### National

Juola, Patrick (2012, April). Hypothesis Generation: The Conjecturator. XDATA Proposers' Day, Arlington, Virginia.

### Regional

Juola, Patrick (2013, August). Human Cyber Forensics and Analytics. Human Cyber Forensics Forum, Washington, District of Columbia.

Juola, Patrick (2005). Great Problems, or Portals are not Killer Applications. Seminar at University of Virginia, Charlottesville, Virginia.

Juola, Patrick (2002). The Case for Humanities Mathematics: When Computing Doesn't Work (extended dance remix). Digital Humanities Curriculum Seminar at the University of Virginia, Charlottesville, Virginia.

### State

Juola, Patrick (2014, April). Forensic Stylometrics and Linguistic Evidence. New Jersey Association of Forensic Sciences Seminar, Atlantic City, New Jersey.

Juola, Patrick (2011). How Can I Attribute You? Let Me Count the Ways. Seminar at Drexel University, Philadelphia, Pennsylvania.

Juola, Patrick (2008). Digital Humanities. Seminar at Bloomsburg University, Bloomsburg, Pennsylvania.

Juola, Patrick (2001). The History of Secrets: Cryptography and Privacy. Seminar at Allegheny College, Meadville, Pennsylvania.

## Patents

2011 - Trend or Pattern Trigger Device. (# 61/395,085)

2011 - Authorship Technologies. (# 61/518,518)

2006 - Detecting Malicious Code Using Behavioral Anomalies. (# 60/826,993)

2002 - Document Categorization and Evaluation via Cross-Entropy. (# 6,397,205)

## Grants

### Funded

2014: Juola, P. Direct Assessment of Authorial Likelihood Using Bayes' Theorem and Monte Carlo Simulation, Principal Investigator, Innovation Works.

2012: Stowell, D. & Juola, P., Is That You, Mr. Lincoln?: Applying Authorship Attribution to the Early Political Writings of Abraham Lincoln, Principal Investigator, GOV-National Endowment for the Humanities.

2010: Juola, P. SDCI Data: Improvement: Java Graphical Authorship Attribution Program (JGAAP), Principal Investigator, GOV-National Science Foundation (NSF).

2009: Juola, P. Conjecture Generation, Principal Investigator, Wimmer Family Foundation.

2008: Juola, P. & Argamon, S., CRI: CRD: Collaborative Research: Community Resources for Authorship Attribution Research, Principal Investigator, GOV-National Science Foundation (NSF).

2007: Juola, P. A Machine-Aided Back-of-the-Book Indexing System, Principal Investigator, GOV-National Endowment for the Humanities.

2007: Juola, P. SDCI Data New: A Modular Software Framework for Evaluation, Testing, and Cross-Fertilization of Authorship Attribution Techniques, Principal Investigator, GOV-National Science Foundation (NSF).

2006: Juola, P. Wimmer Textbook Writing Proposal: Six Septembers, Principal Investigator, Wimmer Family Foundation.

2003: Juola, P. A Model of Aphasia using Dictionary-Derived Natural Language Semantics, Oxford University Press.

Supported by provision of research corpora from the Digital Reference library

.

2003: Simon, D. & Juola, P., Acquisition of a Beowulf Cluster for Research and Education in the Computational Sciences, GOV-National Science Foundation (NSF).

2002: Juola, P. & Levine, S., Interdisciplinary Teaching Development, MATH 320: Topics in Mathematics, Principal Investigator, Wimmer Family Foundation.

2002: Juola, P. Wimmer Textbook Writing Proposal: A Virtual Assembly, Wimmer Family Foundation.

Funded for one course released time

.

1999: Juola, P. Measuring Linguistic Complexity, Principal Investigator, NEH Internal Grant.

## Commercial Software Developed

2004: JGAAP (Java Graphical Authorship Attribution Processor).

1995: PGPfone Radio Alphabet.

### Software Revision

2012: JGAAP (Java Graphical Authorship Attribution Processor) version 5.0.

## Intellectual Contributions-Other

2013: Juola, P., How a Computer Program Helped Reveal J.K. Rowling as Author of A Cuckoo's Calling. Guest Column in Scientific American

2013: Juola, P., Rowling and "Galbraith": an authorial analysis. Guest post for Language Log describing J.K. Rowling case

## SERVICE:

### Service to the University

#### Department Assignments

##### Chair:

2008 – 2012: Research Committee

2002: Graduate Subcommittee on Master's Theses and Projects

**Member:**

- 2008 – 2012: Faculty Search Committee
- 2000 – 2012: Graduate Committee
- 1998 – 2012: Student Achievement and Award Committee
- 1999-2000: Faculty Search Committee

**College Assignments****Chair:**

- 2009 – 2012: Forensic Humanities Committee
- 2006 – 2010: Academic Integrity Appeals Committee
- 2005-2006: Ad-hoc Academic Integrity Subcommittee on Monitoring and Oversight

**Member:**

- 2007 – 2009: Ad-hoc Forensics Curriculum Committee
- 2005-2006: Ad-hoc Academic Integrity Committee

**University Assignments****Member:**

- 2001-2002: Teaching Assistant Award Advisory Committee

**Service to the Profession****Academic Conference: Panelist**

- 2014: The Riddle of Literary Quality Mid-Term Meeting, The Hague, Netherlands (International).
- 2014: Data Analytics: Opportunities and Challenges for UK and US Research Workshop at the University of Maryland, College Park, Maryland (International).

**Board Member: Advisory Board**

- 2016: American Standards Board Forensic Document Examination Consensus Body (National).

**Board Member: Board of Trustees**

- 2000 – 2012: International Quantitative Linguistics Association (International).
- 1999 – 2012: New Methods in Language Processing (International).

**Chair: Conference / Track / Program**

- 2010: T-REX 2010 (TADA Research Evaluation eXchange) (International).
- 2004: Ad-hoc Authorship Attribution Competition (International).

**Reviewer - Grant Proposal Related to Expertise**

- 2007 – 2012: National Endowment for the Humanities (National).
- 2003 – 2012: National Science Foundation (National).

**Member: Committee/Task Force**

- 2003 – 2012: Digital Humanities Development Consortium (International).
- 2003 – 2012: TADA (Text Analysis Developers Alliance) (International).
- 2010: ESSLLI 2010 Workshop on Computational Stylistics (International).
- 2003: QUALICO-2003 (International).

**Honors & Awards****Award**

- 2010: Winner, London THATCamp/DH2010 Developers Challenge, 2010. (Once Upon A Time/Monkeying Around), Association of Digital Humanities Organizations (ADHO).
- 2009: McNulty College Faculty Excellence in Scholarship Award, Duquesne University.

**Honor**

2012: Diplomate, American Board of Forensic Examiners Institute.

2009: Appointed to Office of Research Hall of Fame, Duquesne University.

**Last updated by member on 16-Dec-16 (04:45 PM)**