

# DATA SCIENCE AND DIGITAL HUMANITIES IN THE ISLAMIC WORLD'S PERSPECTIVE

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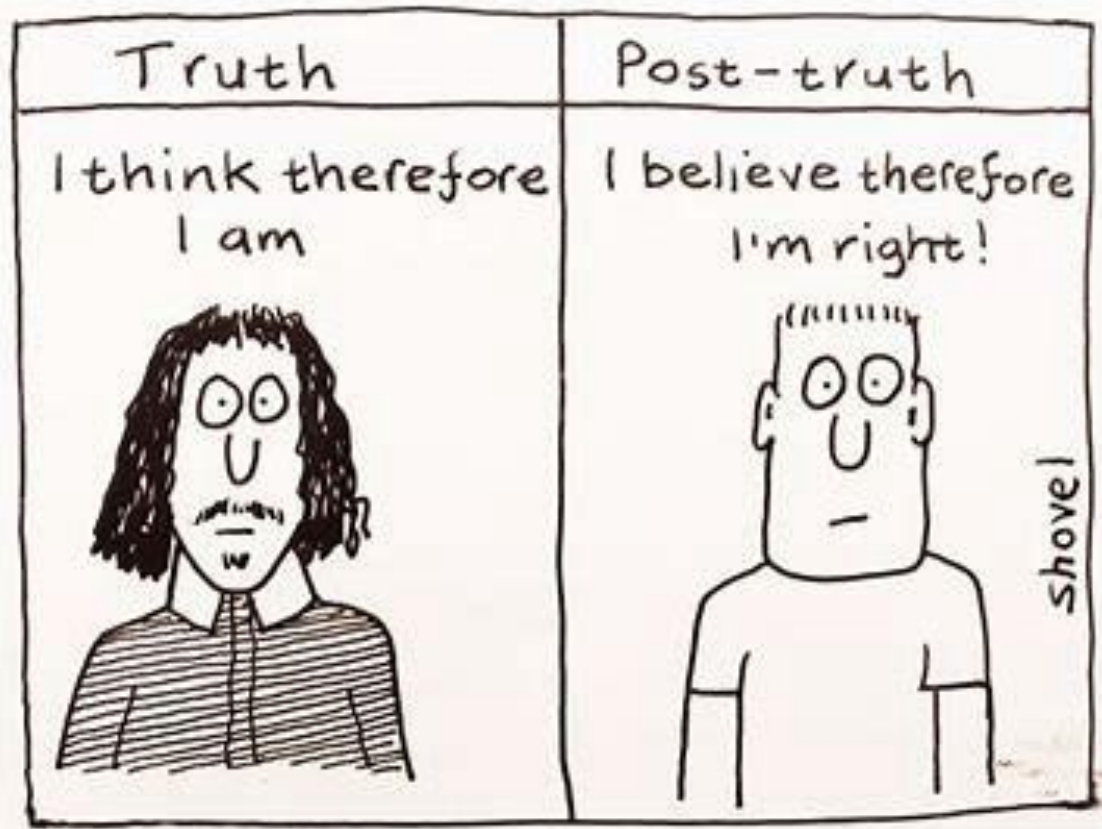
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**"Mendefinisikan Kembali Peradaban Islam di Era Kehidupan Normal Baru"**

UIN Sunan Kalijaga – Yogyakarta

August 4<sup>th</sup>, 2021

# POST TRUTH ERA



"It's a new category – and *even more* strange."



"The world's most valuable resource is no longer oil, but data." (The Economist, 2017)

Source :<https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data>



# INTRODUCTION TO DATA SCIENCE

## What is Data Science ?

Data science is a discipline that provides principles, methodology and guidelines for the analysis of data for tools, values, or insights (Yan, D., & Davis, G.E. (2019). A First Course in Data Science. *Journal of Statistics Education*, 27, 99 – 109)



# What is Data Science ?!



## 2001 – William S. Cleveland

William S. Cleveland of Bell Labs published a paper, “Data Science: An Action Plan for Expanding the Technical Areas of the Field of Statistics” in 2001.

The International Council for Science: Committee on Data for Science and Technology started distributing the *Data Science Journal* in 2001, concentrated on issues like the portrayal of data systems, their production on the web, applications and legitimate issues.

## 2006 – Hadoop 0.1.0

Hadoop 0.1.0, an open-source and non-relational database was released in 2006 which depended on Nutch, another open-source database.

## 2008 – “Title Data Scientist”

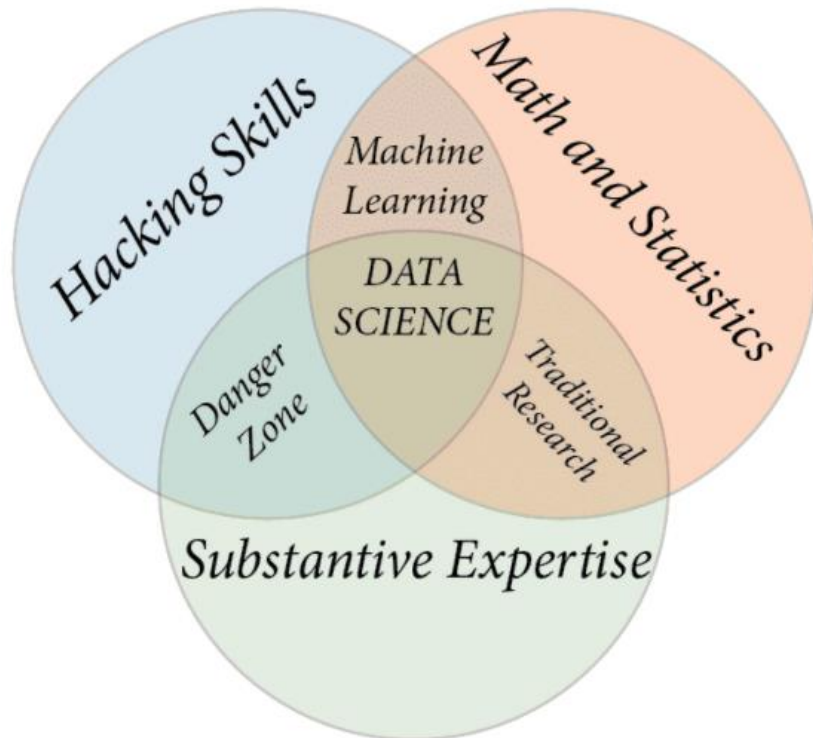
The title, “Data Scientist” turned into a trendy expression and in the long run a piece of the language.

## 2011 -2012 Expansion of Data Scientists by 15000%

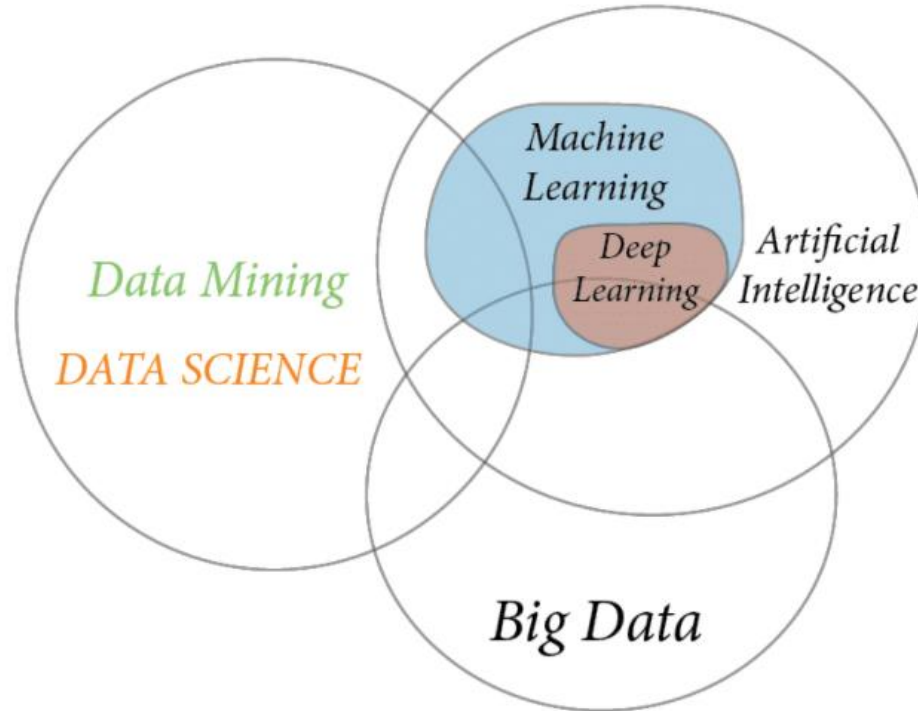
Data Science had already proved beneficial and had turned into a piece of corporate culture as jobs postings for Data Scientists expanded by 15,000% in between 2011 – 2012.

# CONCEPT OF DATA SCIENCE

## What's Data Science?



2010



2015

Source :  
<https://www.kdnuggets.com/2016/10/learn-data-science-8-steps.html>

# Data Science Demanding areas of Research



## Applied Public Affairs

- Campaign Management
- Mass Communication Politics
- Political Analysis
- Survey Sampling

## Business Analytics

- Business Insights/Analytics
- Predictive Analytics
- Business Intelligence

## Finance

- Risk Management
- Managing Customer Data
- Predictive Analytics
- Algorithmic Trading
- Fraud Detection

## Computer Science

- Database Management Systems
- Scientific Computing
- Computer Vision
- Artificial Intelligence
- Data Mining
- Software Engineering

## Cybersecurity

- Computer Networks & Security
- Risk Management
- Threats and Security
- Cryptography
- Information Theory
- Secure Software Development

## Environmental Science

- Environmental GIS
- Climatology
- Remote Sensing
- Spatial Data Analysis



# Data Science Demanding areas of Research

## International Economic Relations

- Environmental Economics
- Trade Relations
- Financial Relations
- Economic Development
- Political Economy

## Microeconomics

- Antitrust Economics & Regulations
- Econometrics
- Industrial | Financial | Public | Labor | Environmental Economics
- Economic Experiments & Impact Evaluation

## Biotechnology

- Genome Analysis
- Drug Discovery & Screening and Side-effect Analysis
- Virtual Assays
- Structure and Folding Patterns
- Disease Discovery & Classification
- Survey Analysis
- Bioinformatics
- Next-gen Sequencing

<https://towardsdatascience.com/major-topics-and-career-paths-in-data-science-467a429e364e>



# The Rise of Data Science in The Humanities Context

Benjamin Peck · Mar 15, 2020 ★

## Data Science for History: Distant Reading

One of the most promising applications of data science for history has been the technique known in the digital humanities as “distant reading.” Distant reading is a deliberate inversion of the more familiar term “close reading,” meaning a careful, fine-grained examination of the particulars of a text. In contrast, distant reading involves the use of automation to make generalizations about vast corpora of text. I alluded to this in my previous post using the example of invasion literature, but now want to take the opportunity to elaborate on what exactly distant reading is and how it works.

The current incarnation of distant reading is credited to Franco Moretti, an Italian literary scholar who shocked the lit world in the early 2000s by suggesting that literary scholars abstain from close reading entirely. He coined the term and wrote the book on distant reading (literally) but quantitative approaches to text long predate him, as Ted Underwood points



**Benjamin Peck**  
Data scientist and history geek committed to answering old questions in new ways.

Follow

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## The New Wave in Digital Humanities

These five rising stars work in alternative-academic and traditional tenure-track positions at public research, liberal arts and Ivy League institutions.

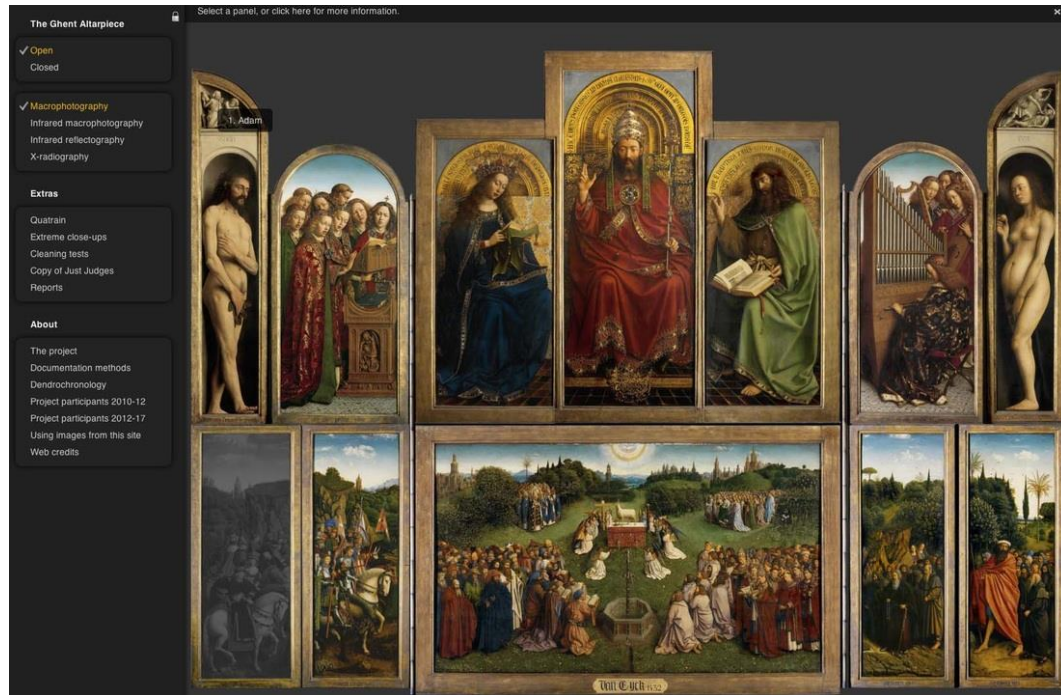
By [Will Fenton](#) // August 2, 2017

The digital humanities have supported a remarkable diversity of teaching, scholarship and service pursued by a diverse group of leaders who are shaping the field's values and priorities. *Inside Digital Learning* here showcases the contributions of five rising stars of the digital humanities: Alex Gil, Lauren Klein, Marisa Parham, Miriam Posner and Jacqueline Wernimont. While no selection can represent the full scope of a field, these scholars represent the emergent and promising work within digital humanities.

“These scholars demonstrate again and again the promise of digital technologies for exploring the most crucial, critical questions in the humanities,” said Kathleen Fitzpatrick, who until recently was associate executive director and director of scholarly communication at the [Modern Language Association](#).

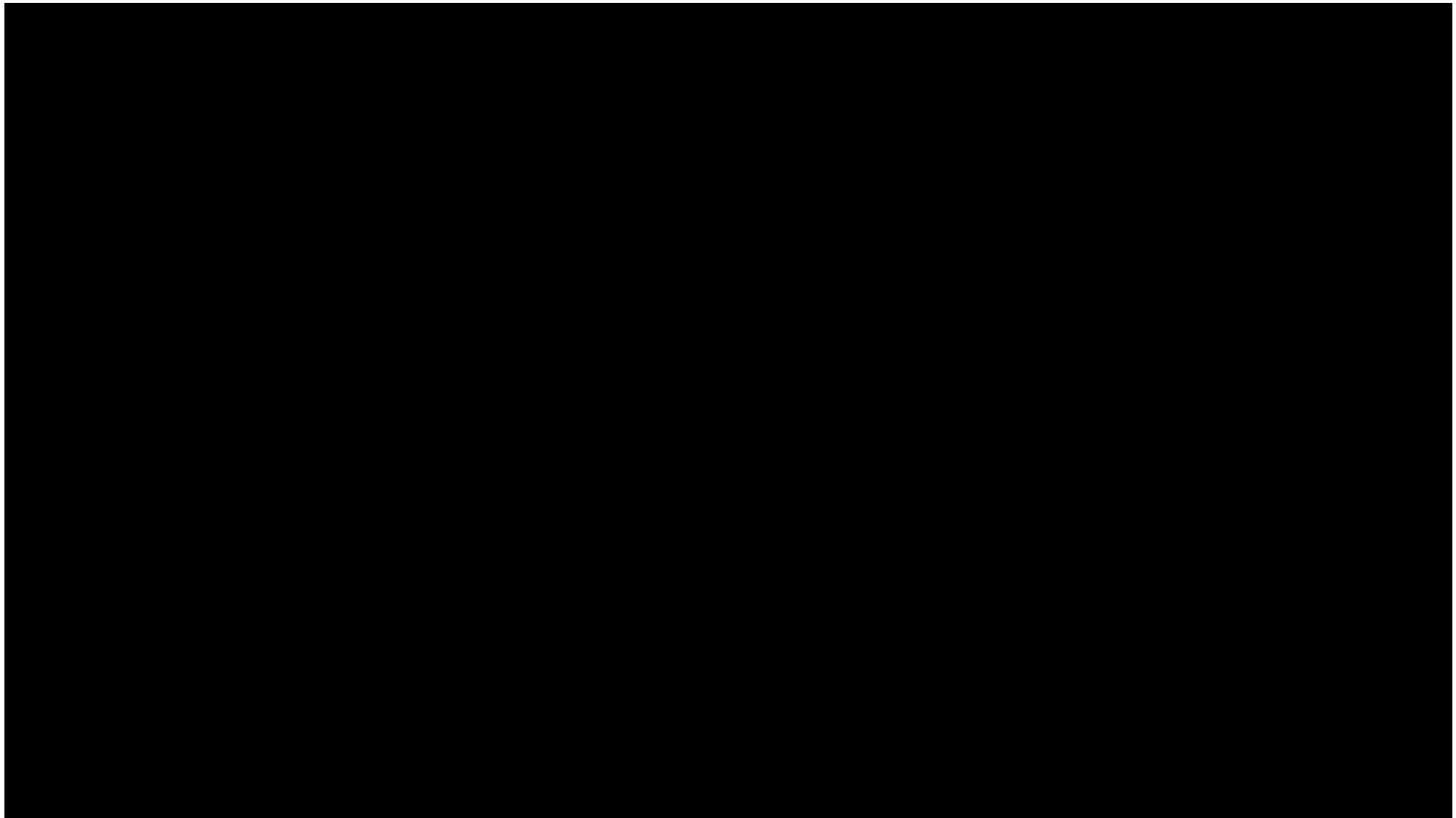


# Digital Humanities



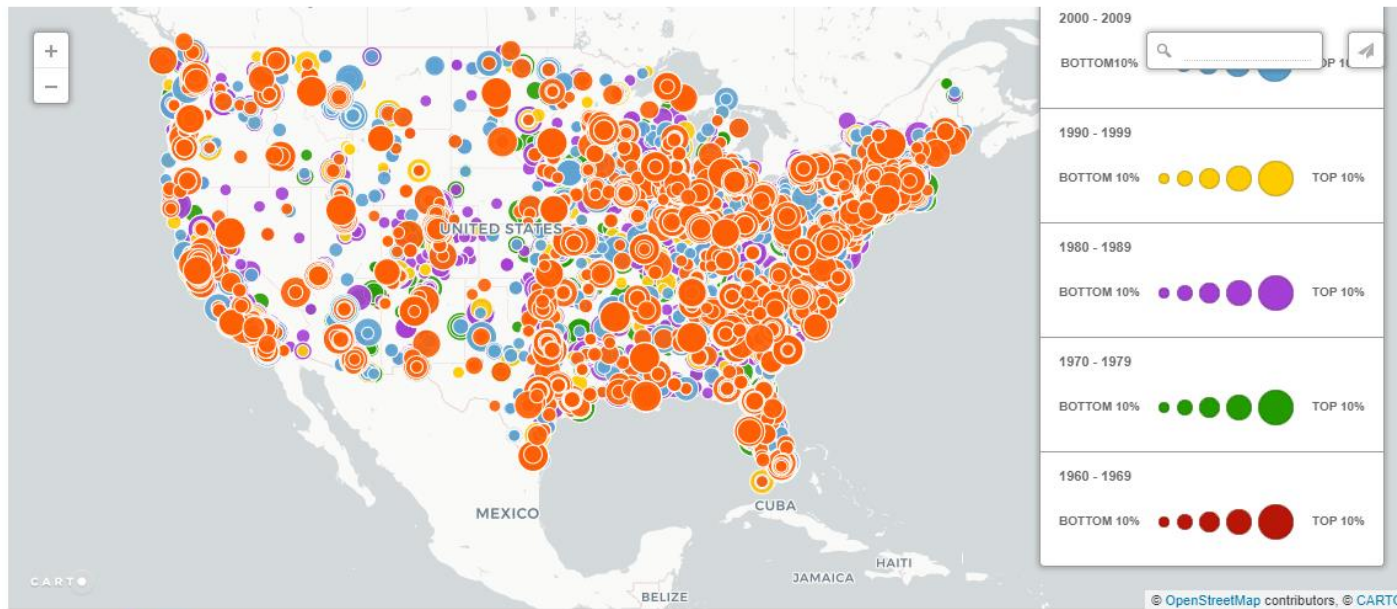
"The digital humanities, also known as humanities computing, is a field of study, research, teaching, and invention concerned with the intersection of computing and the disciplines of the humanities. It is methodological by nature and interdisciplinary in scope. It involves investigation, analysis, synthesis and presentation of information in electronic form. It studies how these media affect the disciplines in which they are used, and what these disciplines have to contribute to our knowledge of computing" (Beecher, J 2021)

Sources : <https://georgiasouthern.libguides.com/c.php?g=776356&p=5726309>



Sources : <https://www.youtube.com/watch?v=X3fa-Y1M6eY>

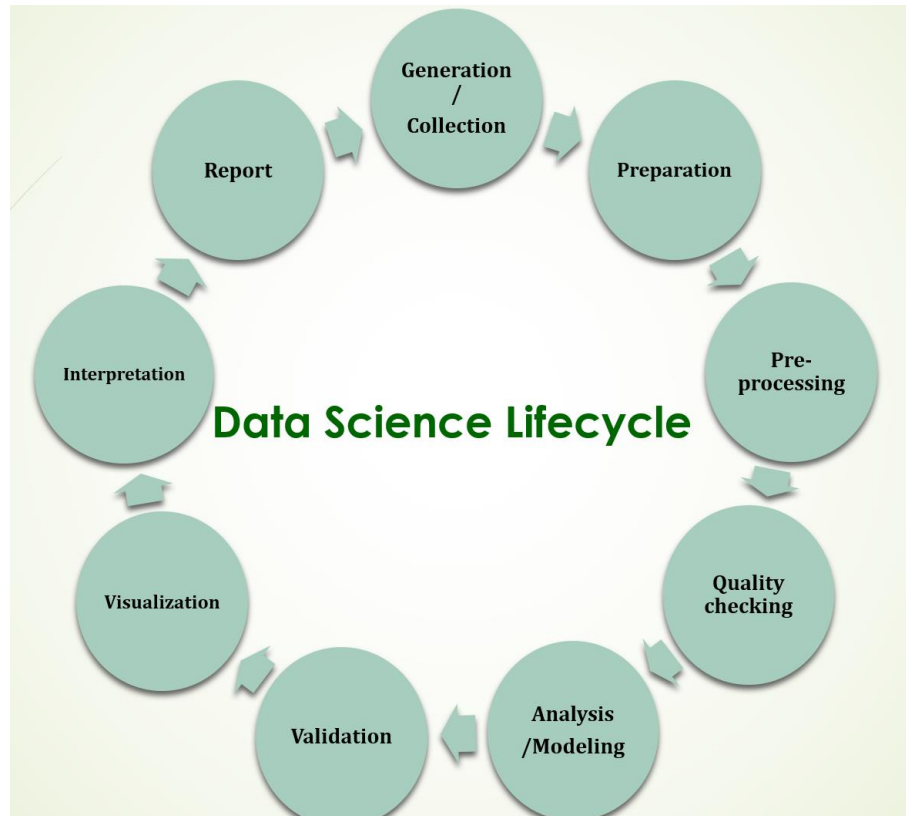
# Visualization of Digital Humanities



Visual digital humanities encompass the computational supported research on complex visual information to treat research questions and interests from the humanities.



# Aspect of Visual Digital Humanities



- Data collection, e.g. through digitization;
- Data retrieval from database records with the transfer of knowledge;
- Examining visual humanities questions, e.g. a composition of complex figurative paintings;
- Reconstructing, simulating, and producing objects; and
- Administering and organizing people and objects.

# ISLAMIC ISSUE



- Several Islamic Issue that haven't touched
  - Social Issue (terrorism, radicalism)
  - Scholarly issue
    - Quran & hadith textual data mining,
    - Islamic scholar bibliometrics
    - Islamic Architecture
    - Islamic Archeology

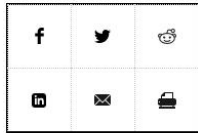
# Data Science on Islamic World

- Practical

## Why Data Science Argues against a Muslim Ban

Some people have relied on "common sense" to brand an entire religion as dangerous—but rigorous analysis proves they're wrong

By Eric Siegel on June 14, 2017



Credit: Alisdare Hickson Flickr (CC BY-SA 2.0)

Editor's Note (June 26, 2018): Scientific American is re-posting the

### READ THIS NEXT

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Andrea Gawrylewski

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## Online Extremism Detection in Textual Content: A Systematic Literature Review

SAJA ALDERA<sup>1</sup>, (Member, IEEE), AHMAD EMAM<sup>1,2</sup>,  
MUHAMMAD AL-QURISHI<sup>1,3,4</sup>, (Member, IEEE),  
MAJED ALRUBAIAN<sup>1,3</sup>, (Member, IEEE), AND  
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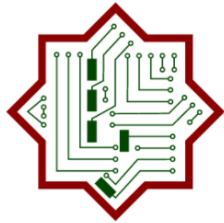
Corresponding author: Saja Aldera (saaldera@ksu.edu.sa)

This work was supported by the Deanship of Scientific Research, King Saud University, through the initiative of DSR Graduate Students Research Support (GSR).

**ABSTRACT** Social media networks such as Twitter, Facebook, YouTube, blogs, and discussion forums are becoming powerful tools that extremist groups use to disseminate radical ideologies and propaganda, and to recruit people to their cause. Identifying extremist social media content and profiles is a top priority for counter-terrorist agencies, technology companies, and governments. The main objective of this paper is to provide a better understanding of the definition of extremism, and a detailed review of the current research regarding online extremism in text. To identify gaps in the literature, a systematic literature review (SLR) of 45 studies published between 2015 and 2020 was undertaken, which revealed challenges, technical pitfalls in previous studies, and opportunities for extending and improving prior results in meaningful ways. The systematic review indicates the need for better understanding of the landscape and directions of the online extremism. This study offers a critical analysis of the new area of research.




- Theoretical



## Islamicate Digital Humanities Network

### The Next Generation

HOME CONFERENCES RESOURCES FORUM TEAM ADVISORY BOARD CONTACT & REGISTRATION 

The Islamicate Digital Humanities Network (IDHN) is a network of scholars with a research focus on Islamicate Digital Studies. This includes scholars from the Humanities, Computer Sciences, Computational Linguistics as well as librarians and archivists that work on topics that relate to Middle Eastern politics and culture, Islam as a religion, Arabic, Persian, and other Islamicate languages, et al. and that are already using or are interested in using digital methods for their research. If in doubt, please contact us at [team@idhn.org](mailto:team@idhn.org).

**IDHN aims at...**

**networking:** ... by bringing together scholars who are interested in exploring and creating more digital tools and computational analysis techniques to enhance our knowledge of Islamicate history, culture, literature, and law.

**informing:** ... by allowing members of the network to share their expertise in order to help address the challenges of interdisciplinary scholarship and by keeping an updated list of tools, databases and other resources.

**discussing:** ...by facilitating the communication of ideas, projects, new tools or latest developments among scholars while critically reflecting our methodology and results.

**organising:** ...by offering a pool of interested scholars with diverse expertise who can help in organising a workshop, seminar, conference, webinar and add their ideas, participation, or further connections.

- Scholars working in digital humanities aspect (visual, interaction, communication etc.)
- Fields of research, topics and methods used by these scholars
- Institutionalization & disciplinary culture of these scholars.

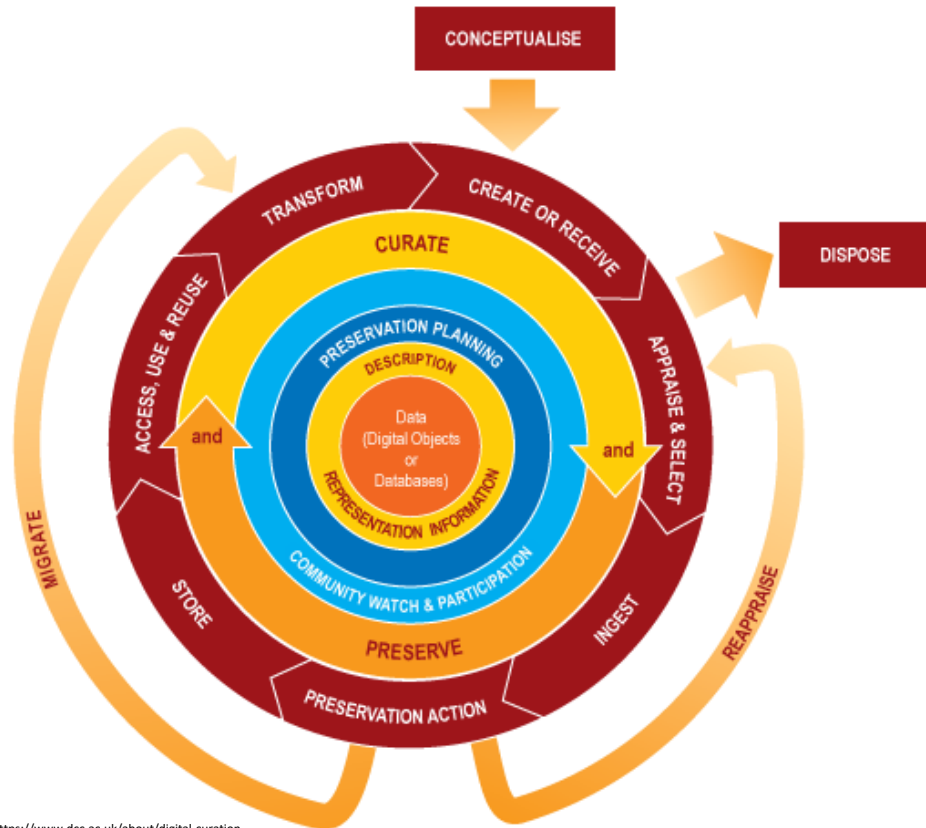


# WHY LIBRARY MATTERS TO DATA AND DIGITAL HUMANITIES



- Data Curation
- Data Asset Preservation
- Research Data Centre

# DIGITAL CURATION



Digital curation is the selection, preservation, maintenance, collection and archiving of digital assets. It establishes, maintains and **adds value** to repositories of digital data for present and future use. This is often accomplished by archivists, librarians, scientists, historians, and scholars. (Gunjal,B., 2015 )

Source :  
[https://www.researchgate.net/publication/270882759\\_Digital\\_Curation\\_in\\_Libraries\\_An\\_innovative\\_way\\_of\\_content\\_preservation\\_and\\_dissemination](https://www.researchgate.net/publication/270882759_Digital_Curation_in_Libraries_An_innovative_way_of_content_preservation_and_dissemination)

# Data Asset Preservation & Analytics

The screenshot displays the UNT Digital Library website. The header is green with the UNT logo and navigation links: HOME, COLLECTIONS, PARTNERS, TITLES, LOCATIONS, TYPES, DATES, ABOUT, TOUR, CONTACT US. The main content area is titled "CyberCemetery" and includes a breadcrumb trail: University Libraries / UNT Digital Library / Explore / Collections / CyberCemetery. A sidebar on the left lists navigation options: About this Collection, Overview, At a Glance, Latest Additions, Cite This Collection, Explore Holdings, Contact Us, Items, Titles, Dates, Locations, Statistics, API, Share, and Search this Collection. The main text describes the CyberCemetery as an archive of defunct government web sites and provides background information on its creation and expansion.

**About This Collection**

The CyberCemetery is an archive of government web sites that have ceased operation (usually web sites of defunct government agencies and commissions that have issued a final report). This collection features a variety of topics indicative of the broad nature of government information. In particular, this collection features web sites that cover topics supporting the university's curriculum and particular program strengths.

**Background**

Foreseeing the potential preservation problems created by federal agencies' ventures into electronic publishing, UNT became the second depository library in the nation to join the Federal Depository Library Program Content Partnerships Program. This program attempts to ensure permanent public access to electronic federal information. As a participant, the [UNT Libraries](#), part of the Federal Depository Library Program (FDLP), were designated the host of the permanent online collection of the defunct Advisory Commission on Intergovernmental Relations (ACIR).

We've since expanded our Content Partnership with the federal government to include dozens of other defunct federal agency web sites. This electronic repository is popularly known as the CyberCemetery. In recognition of our work in this area, the UNT Libraries were designated an [Affiliated Archives](#) of the National Archives and

- Data Asset Preservation
  - Web Archiving
  - Digital Preservation
  - Digital Repository
- Data analytics
  - User behaviour data analytics
  - Research Data Analytics

Source : <https://digital.library.unt.edu/explore/collections/GDCC/>

# Research Data Centre

## Our Collections



ICPSR is brought to you by...

Source : <https://www.icpsr.umich.edu/web/pages/>

## Data Center

- Open Data Repository

## Open Access

- Open Journal and Open Access Center
- Digital Repository

## Current Awareness Service

- Data Service
- Dynamic Data Flow Center



# NEW NORMAL NEW PERSPECTIVES OF LIBRARY TO RESTORE THE ISLAMIC CIVILIZATION



- Re-transforming Role of Libraries as the scholar activity
- Re-transforming Role of Librarians as the scholar activity
- Explore on what library have (Knowing the strength of what they have)
- Marketing and Branding Power



# Thank you

**Conducted by : Irhamni Ali**

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**UIN Sunan Kalijaga – Yogyakarta**

**August 4<sup>th</sup>, 2021**