

# THE LITERATURE REVIEW

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# Literature Review (or Literature Survey)

- The purpose of a **literature review** is to summarize an area of research in a way that requires you to
  - investigate the topic by forcing you to examine, describe, and evaluate how each source addresses related works
  - organize and classify the sources in a reasonable manner for the benefit of the reader.
- Related work includes
  - Background information ("Cancer is a genetic disease")
  - Articles motivating the research problem (related to significance)
    - "Bladder cancer is the 4<sup>th</sup> most common cancer in males..."
  - Articles describing similar research objectives
    - Two databases for analyzing genomic data in cancer include KMplot and Oncomine..."
  - Articles describing other ways of answering the question
  - Articles describing how related methods have been used for either similar or different purposes

# Literature Review – Why?

- A literature review is necessary for formulating your research question, taking into account what others have done
- In a research paper (and proposal), a literature review
  - provides background
  - describes significance (why is the topic important)
  - includes related work and limitations
  - motivates the current research problem
- The literature review will include background in the area of your research but does not mention your specific project.

# Examples of related work

- Research topic: Cellular automata (CA) models of evacuation
  - Significance: statistics regarding fires and other emergencies involving evacuation when obstacles are present
  - Background: Description of cellular automata models
  - Related work: description of various models used to study evacuations and crowds, both mathematical and computational
  - Related work and significance: examples of CA models, not (necessarily) related to traffic, and questions that have been answered using CA models
    - CA models of influenza – identification of strategies to limit disease
    - CA models of fox and rabbit (predator and prey) – identification of parameters favoring the fox or rabbit
  - Limitations – one CA model was used to identify the location of an optimal door, but was limited to a classroom setting and did not include kin or competitive behavior.

# Examples of related work

- Research topic: using Twitter data to predict the election outcome
  - Background: Description of twitter, and social media more generally
  - Background: Description of current polling methods
  - Related work: Description of other projects looking at predicting elections, e.g., based on the economy, etc
  - Related work: Examples of other analyses carried out using Twitter data
    - As a "social sensor" for Earthquakes (<http://dl.acm.org/citation.cfm?id=1772777>)
    - Study of user influence on Twitter (<http://www.sciencedirect.com/science/article/pii/S0306457316300589>)
  - Related work: Examples of where Twitter has been used to make predictions
    - Relationship between Twitter mood and the stock market
    - Using Twitter to predict increased crime rates

# Citation format (IEEE styles)

## Bibliography

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- [2] E. Musk, "The secret Tesla Motors master plan (just between you and me)," *Tesla Blog*, 02-Aug-2006. [Online]. Available (URL omitted for space) [Accessed: 29-Sep-2016].
- [3] C. W. V. Hogue, "Structure databases," in *Bioinformatics*, 2nd ed., A. D. Baxevanis and B. F. F. Ouellette, Eds. New York, NY: Wiley-Interscience, 2001, pp. 83–109.
- [4] J. Sambrook and D. W. Russell, *Molecular cloning: a laboratory manual*, 3rd ed. Cold Spring Harbor, NY: CSHL Press, 2001.
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