should you (not) publish in computer science?

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FRI ’17
map of journals in Web of Science

papers & journals evolution in Web of Science

Paper & citation growth well approximated by $n_t \sim e^{\beta t}$
paper reference age in Web of Science

cited papers

references ← retrospective

your paper

citations ← prospective

citing papers

time
paper reference distributions for physics
paper reference distributions for physics

![Graph 1: Fraction of references over time](image)

- Time $t' \leq t$
- Fraction of references

![Graph 2: Shifted time distributions](image)

- Shifted time $t' - t^*$
- Fraction of references

- Peak $t^* - t$
paper reference distributions for physics
paper reference distributions for physics

![Graphs showing paper reference distributions for physics]
paper reference distributions for physics

![Graph showing the fraction of references over time for different years.]

- Plot 1: Fraction of references for time $t' \leq t$.
- Plot 2: Fraction of references for shifted time $t' - t^*$.

The graphs illustrate the distribution of references over time, highlighting the peak points and shifts in reference distribution for physics papers from 1970 to 2010.
paper reference distributions for physics
paper reference distributions for physics
for $t' \leq t^*$ distributions well approximated by

$$\sim \frac{1}{t-t'} e^{-\frac{(\ln(t-t')-\mu)^2}{2\sigma^2} - \beta(t-t')}$$
paper reference distributions for computer science
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paper reference distributions for computer science

![Graphs showing reference distributions for computer science from 1970 to 2010.](image)
paper reference distributions for computer science
paper reference distributions for computer science
Paper reference distributions for computer science

![Graph showing distribution of references over time and shifted time.](image)
paper reference distributions for computer science
paper reference distributions for computer science

for $t' \leq t^*$ distributions well approximated by $\sim \frac{1}{t-t'} e^{-(\ln(t-t')-\mu)^2/2\sigma^2} - \beta(t-t')$
paper citation age in Web of Science

cited papers  references  your paper  citing papers

citations  prospective

retrospective

time

→ 7/15 ←
paper citation distributions for physics
paper citation distributions for physics

\[ t' \geq t \]

\[ \text{fraction of citations} \]

\[ \text{fraction of citations} \]

\[ t = \text{peak } t^* - t \]

\[ t' - t^* \]

\[ \text{time } t \]

\[ \text{time } t' \]

\[ 1970 \quad 1980 \quad 1990 \quad 2000 \quad 2010 \]

\[ 0 \quad 0.05 \quad 0.1 \quad 0.15 \quad 0.2 \]

\[ 1970 \quad 1980 \quad 1990 \quad 2000 \quad 2010 \]

\[ 0 \quad 2 \quad 4 \quad 6 \quad 8 \quad 10 \]
paper citation distributions for physics
paper citation distributions for physics

![Graph of citation distributions over time for physics papers.](image)
paper citation distributions for physics
paper citation distributions for physics

- Left panel: Graph showing the fraction of citations over time $t' \geq t$ for different time periods.
- Right panel: Graph showing the fraction of citations for shifted $t' - t^*$, with an inset at the top left corner.
paper citation distributions for physics
for \( t' \geq t^* \) distributions well approximated by

\[
\sim \frac{1}{t' - t} e^{-\left(\ln(t' - t) - \mu\right)^2 / 2\sigma^2}
\]
paper citation distributions for computer science
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![Graphs showing citation distributions over time.](image)
paper citation distributions for computer science
paper citation distributions for computer science
paper citation distributions for computer science
paper citation distributions for computer science

for $t' \geq 2000$ distributions are increasing functions of $t'$
normalized citation distributions for computer science

citations from papers in year $t'$ count as $1/n_{t'}$
normalized citation distributions for computer science citations from papers in year $t'$ count as $1/n_{t'}$
normalized citation distributions for computer science

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citations from papers in year $t'$ count as $1/n_{t'}$
normalized **citation distributions** for **computer science**

citations from papers in year $t'$ count as $1/n_{t'}$

for $t' \geq t^*$ distributions well approximated by

$$\sim \frac{1}{(t' - t)n_{t'}} e^{-\left(\ln(t' - t) - \mu\right)^2/2\sigma^2}$$
normalized citation distributions for physics

citations from papers in year $t'$ count as $1/n_{t'}$
normalized citation distributions for physics

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for $t' \geq t^*$ distributions well approximated by

$$\sim \frac{1}{(t' - t)n_{t'}} e^{-\frac{(\ln(t' - t) - \mu)^2}{2\sigma^2}}$$
paper citation network from Web of Science

triangles proportional to number of citations $c$ & circles few citations $c \leq 1$
paper citation exponents in Web of Science

citations from papers in year \( t' \) count as \( 1/n_{t'} \)

computer science \( \sim 0.0016t \)

physics \( \sim -0.0012t \)

normalized citation exponent \( \gamma \)

fraction of papers with \( c \) citations well approximated by \( \sim c^{-\gamma} \)
reference distributions

\[ \text{constant through time in Web of Science} \]

\[ \text{citation distributions} \]

\[ \text{in physics, biochemistry, APS} \]

\[ \text{in computer science, economics, i&ls} \]

\[ \text{after correction for paper & citation growth} \]

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