

Quantifying the changing role of past publications

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From the moment a paper is published in a scientific journal it exists within the evolving web of other papers, thus, its actual meaning to the reader changes. To track how scientific ideas (represented by groups of scientific papers) appear and evolve, we apply a novel combination of algorithms explicitly allowing for papers to change their groups. We (1) identify the overlapping clusters of the undirected yearly co-citation networks of the Web of Science (WoS) between 1975 and 2008. We (2) match these yearly clusters (groups) to form group timelines. After visualizing the longest lived groups of the entire data set we assign topic labels to all groups. We find that in the entire WoS multidisciplinary is clearly over-represented among cutting edge ideas. In addition, we provide detailed examples for papers that (1) change their topic labels and (2) move between groups.