















## VI. CONCLUSION

In this paper we introduced and studied the novel problem of template-driven team formation (TDTF). We showed that the problem is NP-hard in the general case, but it can be solved in polynomial time using dynamic programming for tree templates when workers have a single skill, and the template positions have unique skills. We provided heuristic and approximation algorithms for the general case. Our experiments demonstrate that our algorithms are effective in practice. For future work, we are interested in studying the effect of the template graph on the team formation problem and on the problem approximability, and also incorporate ideas from skill-specific ranking [22] into the team formation process.

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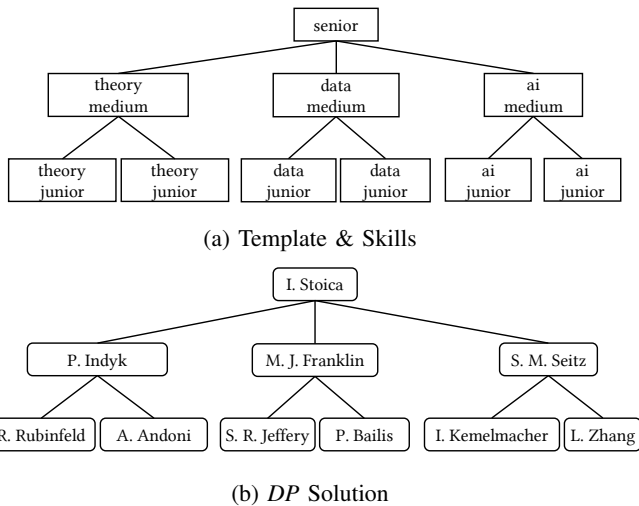


Fig. 4: Academic case study.

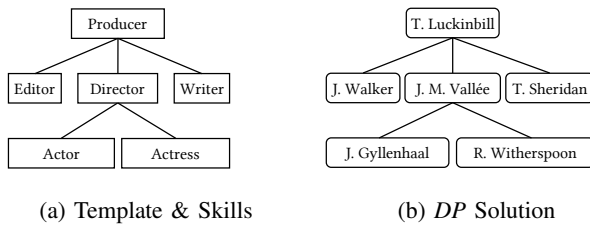


Fig. 5: Movies case study.

head of the lab. Piotr Indyk, Professor at MIT, authority in theoretical computer science, is the head of the Theory division. P. Indyk has common collaborators with I. Stoica (Sammuel Madden). He manages his former student, Alexandr Adoni, and Ronitt Rubinfeld who is also professor at MIT. Hence both are academically close to him. The head of the Data division is Michael Franklin, longtime collaborator of I. Stoica, highly respected in the field of Data Bases. He manages his former Ph.D. student Shawn R. Jeffery, and Peter Bailis, U.C. Berkeley graduate and former Ph.D. student of I. Stoica, with whom he has co-authored several papers. The head of the AI division is Steven Seitz, an expert in computer vision. He received his Bachelor from U.C. Berkeley, and he has common collaborators with I. Stoica (e.g., Sameer Agarwal). He manages two of his former Ph.D. students, Ira Kemelmacher-Shilzerman and Li Zhang.

The template we use for the *Movies* dataset is shown in Figure 5a. We have a Producer at the root of the tree who employs an Editor, a Director and a Writer, and the Director collaborates with an Actor and an Actress. The solution of the *DP* algorithm is shown in Figure 5b. The Producer, T. Luckinbill, has worked together with T. Sheridan and J. Walker in the movie *Sicario* (2015) and with J. M. Vallee in *Demolition* (2015) in which J. Gyllenhaal stars as a lead actor. Also, R. Witherspoon stars in Vallee's movie *Wild* (2014). Therefore, again the solution we obtain is highly intuitive.