

Running with Cases: A CBR Approach to Running Your Best Marathon

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2 Summary

Running a marathon personal-best (PB) needs careful planning. It starts with a target-time to aim for; a time that is not so easy that you will feel untested, but also not so hard that you run the risk of ruining your race because you hit the wall. But a target finish-time alone is not enough to ensure marathon success. Runners need a race-plan or *pace plan* to achieve this time, a segment by segment plan for how fast or slow they should run, tailored to the course. A good pace plan will help a runner to manage their effort throughout the race, segment by segment, hill by hill. This is especially important during the crucial early stages of the marathon, when many go out too fast, and helps to reduce the risk of hitting the wall later in the race.

The main contribution of this work is to introduce a novel case-based, recommender system for helping marathon runners to identify, and plan for, new personal-best finish-times. We describe how to construct suitable *training cases* from conventional race-records, and how to use these cases to *predict* a PB time and *recommend* a tailored pace plan. We evaluate the results using data from the last 12 years of the Chicago marathon.

References

1. B. Smyth and P. Cunningham, “Running with cases: A CBR approach to running your best marathon,” in *Case-Based Reasoning Research and Development - 25th International Conference, ICCBR 2017, Trondheim, Norway, June 26-28, 2017, Proceedings*, pp. 360–374, 2017.