

Recommendation of Tourism Resources Supported by Crowdsourcing

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Motivation

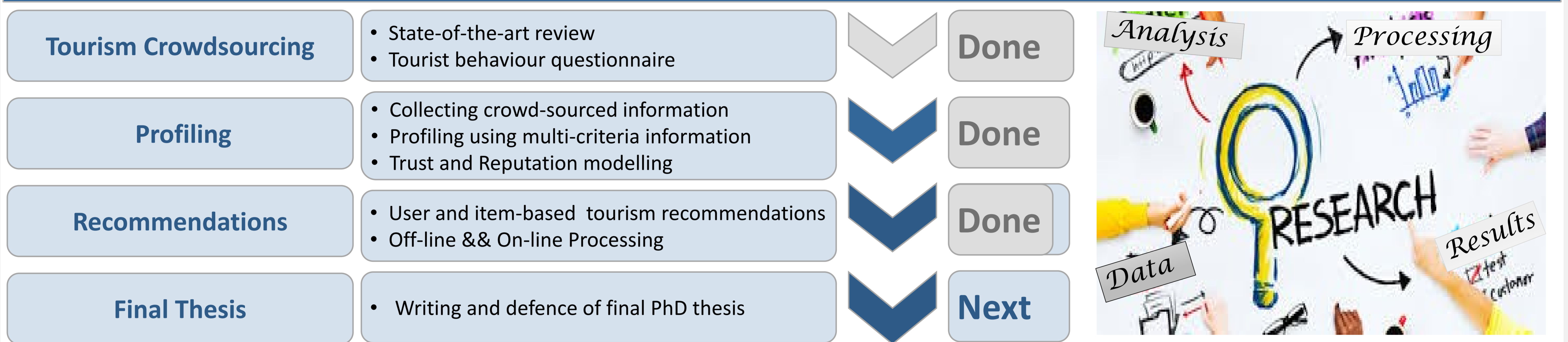
Impact of Crowdsourcing in Tourism Recommendations



Goals

- Explore the actual Impact of Mobile Technology in the planning, experiencing and sharing of travelling
- Explore Crowdsourcing to create and update the tourists and tourism resources profiles
- Design Trust & Reputation models to obtain refined profiles
- Build Recommendations using crowd-sourced multi-criteria tourism information

Research Plan



Results & Discussions

Crowd-sourced Data	Profiling	Recommendations																																										
<p>Expedia DataSet</p> <ul style="list-style-type: none"> 1090 users 6276 items 214342 reviews <p>TripAdvisor DataSet</p> <ul style="list-style-type: none"> 7452 users 9114 items 127517 reviews 	<p>Crowd-sourced Multi-criteria Ratings</p> <ul style="list-style-type: none"> Most Representative Rating (MRR) Non-Null Average Rating (NNAR): $r_{ui} = \frac{\sum_{j=1}^n r_{u,i,j}}{n}$ <ul style="list-style-type: none"> Personalised Weighted Average Rating (PWRA): $r_{ui} = \frac{\sum_{j=1}^n n_j r_{u,i,j}}{\sum_{j=1}^n n_j}$ <ul style="list-style-type: none"> Trust-based Modelling $T_{u,k} = \frac{n_{u,k}}{N_{u,k}}$ <p>Crowd-sourced Textual Reviews</p> <ul style="list-style-type: none"> Topic Modelling; Latent Dirichlet Allocation 	<p>Collaborative Filters</p> <ul style="list-style-type: none"> Model-Based (ALS-WR) <table border="1"> <thead> <tr> <th></th> <th>Profiling</th> <th>NRMSE</th> <th>Recall</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Hotel Expedia</td> <td>MRR</td> <td>0,196</td> <td>0,254</td> </tr> <tr> <td>NNAR</td> <td>0,167</td> <td>0,268</td> </tr> <tr> <td>PWRA</td> <td><u>0,167</u></td> <td><u>0,268</u></td> </tr> <tr> <td rowspan="3">TripAdvisor</td> <td>MRR</td> <td>0,215</td> <td>0,351</td> </tr> <tr> <td>NNAR</td> <td>0,191</td> <td>0,363</td> </tr> <tr> <td>PWRA</td> <td><u>0,186</u></td> <td><u>0,374</u></td> </tr> </tbody> </table> <ul style="list-style-type: none"> Memory-Based (k-NN) <table border="1"> <thead> <tr> <th></th> <th>Profiling</th> <th>NRMSE</th> <th>Recall</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Hotel Expedia</td> <td>PWRA</td> <td>0,13</td> <td>0,304</td> </tr> <tr> <td>PWRA + Trust</td> <td><u>0,121</u></td> <td><u>0,639</u></td> </tr> <tr> <td rowspan="2">TripAdvisor</td> <td>PWRA</td> <td>0,152</td> <td>0,489</td> </tr> <tr> <td>PWRA + Trust</td> <td><u>0,132</u></td> <td><u>0,823</u></td> </tr> </tbody> </table>		Profiling	NRMSE	Recall	Hotel Expedia	MRR	0,196	0,254	NNAR	0,167	0,268	PWRA	<u>0,167</u>	<u>0,268</u>	TripAdvisor	MRR	0,215	0,351	NNAR	0,191	0,363	PWRA	<u>0,186</u>	<u>0,374</u>		Profiling	NRMSE	Recall	Hotel Expedia	PWRA	0,13	0,304	PWRA + Trust	<u>0,121</u>	<u>0,639</u>	TripAdvisor	PWRA	0,152	0,489	PWRA + Trust	<u>0,132</u>	<u>0,823</u>
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Papers

Published Papers

- Leal, Fátima, Horacio González-Vélez, B. Malheiro, and J. Burguillo. Semantic Profiling and Destination Recommendation based on Crowd-sourced Tourist Reviews. *Distributed Computing and Artificial Intelligence, 14th International Conference, 2017*. To appear
- Leal, Fátima, Horacio González-Vélez, B. Malheiro, and J. Burguillo. Profiling and rating prediction from multi-criteria crowd-sourced hotel rating. In *Proceedings of 31th European Conference on Modelling and Simulation International Conference, 2017*.
- Leal, Fátima, Benedita Malheiro, and Juan Carlos Burguillo. Prediction and Analysis of Hotel Ratings from Crowd-Sourced Data. *World Conference on Information Systems and Technologies*. Springer, Cham, 2017.
- Leal, Fátima, B. Malheiro, J. Dias, and J. Burguillo (2016). Analysis and Visualisation of Crowd-sourced Tourism Data. In *Proceedings of the 2016 International C* Conference on Computer Science & Software Engineering*

- Leal, Fátima, B. Malheiro, and J. Burguillo (2016). Recommendation of Tourism Resources Supported by Crowdsourcing. In *Proceedings of the ENTER 2016 PhD Workshop, International Conference on Information and Communication Technologies in Tourism 2016*.

Submitted Papers

- Context-aware Tourism Technologies* -- submitted to The Knowledge Engineering Review Journal (waiting final acceptance).
- Trust-based Modelling of Multi-criteria Crowd-sourced Data* -- submitted to Data Science and Engineering Journal (under revision).

On-going Papers

- How Technology Enhances the Tourist Experience: A Survey* – submit to *Annals of Tourism Research journal*
- On-line Guest Profiling and Hotel Recommendation* – submit to *Information Systems and Applications journal*

