

# Factor Graph Tutorial

HU, Pili

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**Abstract**

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## 1 An Example

## 2 Discussions

Since the development of factor graph is boosted in the past decade, different authors come up with different description of similar problems. Not to distinguish right from wrong, I just regard those stuffs out there as inconsistent. My opinion on some parts of past literature:

- In Bishop's book[1], chapter 8.4.5, P411. The example is not good. Actually, when talking about that probability maximization problem, we should know "product" corresponds to product operator, and "sum" corresponds to max operator. In this case, the marginalization operation for a single variable is indeed the maximization for each instance of that variable. Using local marginalized function(max), we can certainly get the global probability maximization point considering all variables.
- As for Dynamic Factor Graph, the author of this paper do not advocate the abuse of this term like an extension of factor graph. FG itself is able to model system dynamics, as we've already seen in those examples above. Other authors may use the term DFG, but their DFG is application specific. Those graphs are essentially FG. Not until we examine the physical meaning of some factor nodes do we realize their "dynamic" property.

## References

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