

University of Groningen

Contemporary issues in static and dynamic prediction

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DOI:
[10.33612/diss.232289260](https://doi.org/10.33612/diss.232289260)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2022

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):
Chen, Y. (2022). *Contemporary issues in static and dynamic prediction: some applications and evaluation in the clinical context*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen. <https://doi.org/10.33612/diss.232289260>

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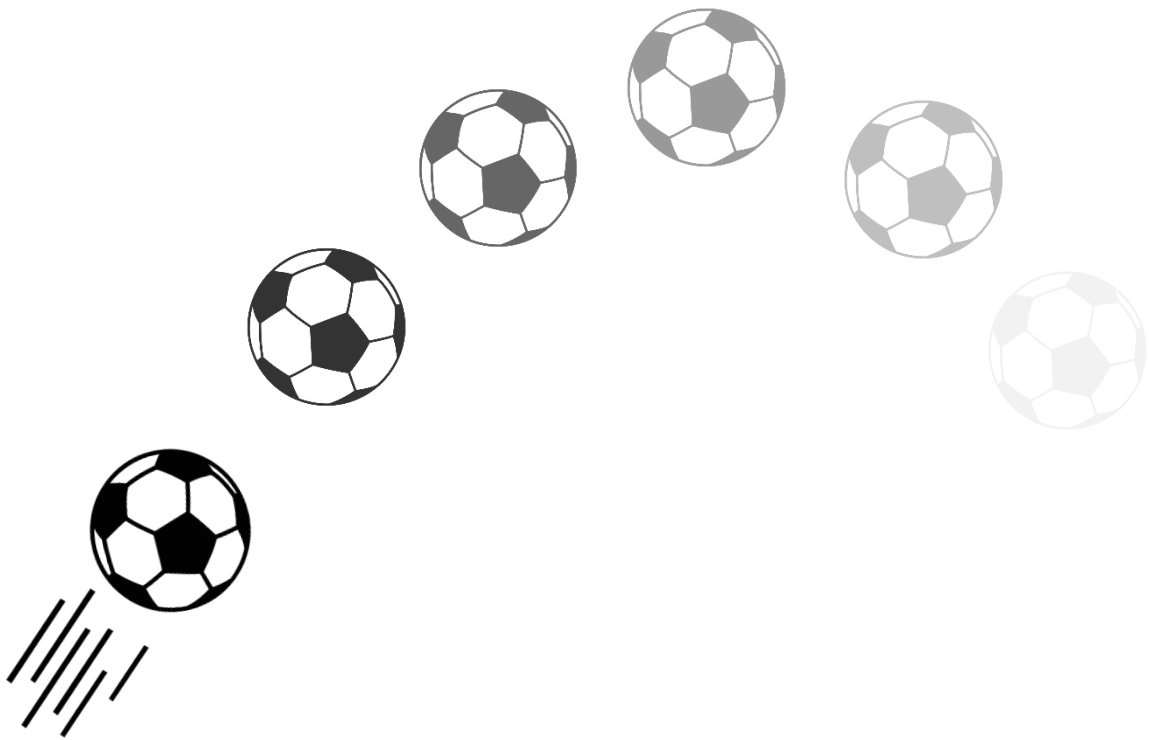
some applications and evaluation in the clinical context



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陈韞韬

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Cover design: Danni Chen and Yuntao Chen

Cover icon: Sketchpad|<https://sketch.io/sketchpad/>

Noun Project|www.thenounproject.com

Layout: Yuntao Chen

Print: Guus Gijben, Proefschrift-AIO|www.proefschrift-aio.nl

The printing of this thesis was financially supported by University of Groningen, University Medical Center Groningen, and SHARE institute.



university of
 groningen

Contemporary issues in static and dynamic prediction

some applications and evaluation in the clinical context

PhD thesis

to obtain the degree of PhD at the
University of Groningen
on the authority of the
Rector Magnificus Prof. C. Wijmenga
and in accordance with
the decision by the College of Deans.

This thesis will be defended in public on

Wednesday 31 August 2022 at 9.00 hours

by

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Propositions accompanying the thesis

1. A heart failure phenotype stratified model that accounts for different baseline mortality rates and predictor-outcome associations results in better predictive performance for predicting mortality in patients hospitalized with acute heart failure. This thesis
2. Discharge alive from hospital should be considered as a competing risk when developing prognostic models for in-hospital mortality in hospitalized COVID-19 patients. This thesis
3. The joint modeling of longitudinal and survival data closely reflects contemporary trends in medicine: personalized and dynamic. This thesis
4. Misclassification model, an important special case of hidden Markov model, is very useful to account for dynamic change of kidney function with age and potential misclassification of chronic kidney disease stage in evaluating the association between chronic kidney disease stage and new-onset heart failure. This thesis
5. Small improvements in renal function in the middle-aged population may result in an important reduction in the incidence of new-onset heart failure. This thesis
6. Dynamic prediction based on hidden Markov models can improve predictive performance in heart failure mortality prediction by incorporating serial NT-proBNP measurements. This thesis
7. Balancing predictive accuracy and model complexity is important for prediction models to get wider adoption in clinical practice and to be translated into clinical benefit. This thesis
8. 凡物之骤为之而追成焉者，其器小也；物之一览而易尽者，其中无有也。
Things that can be done in a flash are small; things that can be seen through at a glance are shallow. 曾国藩 (Zeng Guofan)
9. 为学读书 须是耐烦。To learn to read, one must be patient. 朱熹 (Zhu Xi)

Paranymphs

Lilu Ding

Yi Wu

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