UCL DEPARTMENT OF COMPUTER SCIENCE
TOBIAS RITSCHEL
PROFESSOR OF COMPUTER GRAPHICS
VIRTUAL ENVIRONMENTS AND COMPUTER GRAPHICS

11/3/2025

To whom it might concern:

This is to express my support for Tairan Wang as an exceptional student who attended my courses. I have proposed writing this general recommendation letter on my own initiative.

To introduce myself, I am a Professor of Computer Graphics with the VECG Group at the University College London. I have made significant contributions to computer graphics, focusing on appearance reproduction, mixed reality systems, and advanced graphics pipelines. I received the Eurographics Young Researcher Award (2014) and the Eurographics Dissertation Prize (2011). I have also played pivotal roles in organizing and chairing major conferences such as Eurographics and the Eurographics Symposium on Rendering and recently as Co-chair of Eurographics 2025. I have been an Area Chair for top conferences such as NeurIPS, CVPR, and ICCV/ECCV and a member of program committees for leading conferences, including SIGGRAPH and Eurographics. I am also on the editorial boards of Computer Graphics Forum, IEEE Transactions on Visualization and Computer Graphics. I have been working in the field for more than 15 years. I have co-authored over 150 publications and have been cited 6600+ times resulting in an h-index of 44. Several of my postdocs have secured CS faculty positions, many of my MSc students a PhD and several prestigious awards.

Tairan attended all lectures of Computer Graphics (COMP0027) upon which they asked many in-depth questions that often showed a deep understanding of the matter taught, sometimes exposing some inconsistencies in the materials or edge cases of the entire approach. That documents Tairan with ease can grasp the material and think ahead.

The reason that made me choose to write this letter however is the following: As part of the assessment, students must anonymously (!) submit coursework. Part of that coursework is to

Department of Computer Science
University College London
Gower Street London
WC1E 6BT
Tel: +44 (0)20 31087115
t.ritschel@ucl.ac.uk

implement variance reduction into Monte Carlo Path tracing and to explain the approach taken. Upon correction, which is done by my teaching assistants (TA), it was flagged to me that one candidate has submitted a massive essay of many pages on variance reduction. The question was only asking for a few sentences. TA and I thought this a fabrication of generative AI which is not to be taken seriously. We approached the student to offer they explain the document if they want the credits. And that is what Tairan did.

Tairan came to my office, and step by step explained me on whiteboard and with almost no error:

- Quasi-Monte Carlo (QMC)
    - Construction of radical inverse
    - Halton sequences
- The mathematics of discrepancy, on my request in 1D, in all subtlety with supremum and star vs other discrepancy
- He did not get randomized QMC, but took onboard my explanation
- The relation of discrepancy and error bounds for MC (Koksma-Hlavka inequality)
- The notion of variation in difference to variance
    - Including examples how this is a permutation over different segmentations
- The derivation of importance sampling and why it is improving errors
- The derivation of cosine importance sampling
- And then Tairan dropped the ball with Phong importance sampling that he could derive mathematically but is not working in his code due to some other mistake he did not see to relate to what did not work.

This is the most impressive show of Monte Carlo path tracing, based on lectures alone, which I have seen in 10 years of teaching this at UCL. The only other person that did show such a mathematical understanding of this topic is now my PhD student and doing quite well.

I hope this my little report will be a reward to Tairan for all the hard work in understanding this matter. I think it is worth a total of less than one percent of the total mark, but at least it made me quite happy to see that some people do fully and seriously understand what is being taught. I wish

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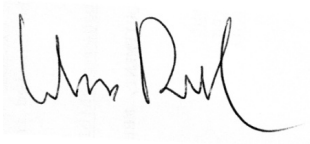
all the best for Tairan's next steps and hope he will find the support to pursue an academic career or anything else suitable for such great talent!

Sincerely,



Prof Tobias Ritschel, Dr.-Ing.

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