Jeha Yang Department of Statistics

Statement of Purpose

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In a today's flood of countless information, decision making is becoming harder and harder than ever, for people who make every single decision with great care. Thus, I, one of such type of people, am highly interested in how to make the best choice based on 'rational' reasons, which could be a philosophy of statistics. Studying statistics with a strong mathematical background, I am motivated to go to graduate school, investigate statistics deeper, and finally find my own statistical method which would contribute to both learning and public welfare. [In this regard, the Department of Statistics of the Harvard University, offering opportunity to research statistical theories and affiliate with other subjects including economics and health care policy under the supervision of the perfect faculty, definitely suits me best.] Plus, I believe that I am academically and mentally well-prepared to be a graduate student of the Department of Statistics of the Harvard University, for the reasons stated below.

First of all, my mathematical ability is high enough to do statistics research at the Harvard graduate school. From an early age, I was fascinated with numbers and mathematical concepts, and began to delve into interesting fields of mathematics such as inequality and sequence. As a result, I achieved outstanding results in numerous mathematical competitions including two International Mathematical Olympiads (IMO) and two Korean Undergraduate Mathematical Olympiads, developed mathematical creativity, and became an expert of algebraic manipulation. With such strengths, I also learned and solidified the base of higher mathematics during the first two years at the Seoul National University(SNU). Studying subjects of applied mathematics and statistics in last one year(during last year?), I did programming with languages such as matlab, fortran, and C, and reconfirmed that my cumulative academic experience and mathematical skills are the firm foundation of future statistics research work.

Furthermore, through extra experience, I have gained confidence in teamwork, English and self-discipline, which are essential for graduate school life in the United States. Participation in Korea Mathematical Olympiads summer/winter schools as a TA and IMOs as an observer taught me how to share and discuss ideas with junior/senior colleagues, and even professors. Working with U.S. soldiers in a military hospital enabled me to overcome the language barrier, cooperate with others in a real social life, and eventually have a dream of studying abroad. At that time, my lumbar disc disease, caused by rucksack marches at an army recruit training center, did afflict me for a while, but soon I started doing my best to take care of my health. From then on health care became one of my concerns, and after being discharged from military service, I have trained myself by joining private Pilates sessions and an Alexander technique class at the SNU. In conclusion, the illness made me have a good habit of self-management, a driving force of consistent work in graduate school. (***The highlighted part does not tell much about you... I would rather not use this example. Moreover, this part does not belong to this paragraph.***)

Not only am I ready for entering [the Department of Statistics of the Harvard University], but I also have a wide range of scholarly interests in statistics through classes instructed by outstanding professors. Prof. Byeong Uk Park and Prof. Woo Chul Kim taught me mathematical statistics thoroughly and clearly, dealing with various kinds of distributions and sample distributions, limit distributions, MLRT, ...etc. (or simply, covering *Introduction to Mathematical Statistics (Hogg, Mckean, Craig), 6th ed., Prentice Hall)*. What I also learned from their lectures is that researching mathematical statistics theories(plural) (such as nonparametric inference methods) is a creative work of finding useful methods with knowledge(or high level) of linear algebra and analytics; this attracts my attention a lot because I have a profound understanding of these two subjects and have always wanted to be more imaginative. Prof. Gerald Trutnau inducted me into the new world of probability theory and stochastic processes, by introducing a variety of new concepts of those subjects such as different types of convergences, independency, conditional probabilities, Brownian motion, and martingales. Moreover, using these concepts to develop theory, I was captivated by combining abstract objects and analytic skills; reviewing such arguments was a good exercise of constructing logically and mathematically rigorous arguments necessary for going deeper into statistics. Data mining is my another field of interest, as I have learned a lot of data mining methodologies in Prof. Woncheol Jang's lecture. While learning topics covering from linear regression to correlation

analysis (or both supervised and unsupervised learning) and reading papers such as *SZÉKELY, G. J. and Rizzo M. L. (2009). Brownian distance covariance. The Annals of Applied Statistics 2009, Vol. 3, No. 4, 1236–1265*, themes including 'Interpretability versus predictive performance' occurred alternatively or simultaneously, which stimulated my curiosity about creating a method that fits in a specific type of data. To summarize, my academic interest of statistics intersects with mathematical statistics, probability theory, and applied statistics.

Together with my research ambitions, one of blue prints of my future might be a professional statistician (I think it's better to say "my future lies in becoming a professional statistician"... You wouldn't want to say that there are a lot of paths I can choose and I don't know which) involving interdisciplinary studies with economics, genetics, or health sciences. Double majoring in economics, combining theory with practice and eventually improving quality of human life became my dream. Among a bunch of subjects related to statistics, several are in my bucket list : examples from stochastic processes and stochastic differential equations have intrigued me about stochastic modelling in economics; Prof. Martin A. Nowak's special lecture of evolutionary dynamics at the SNU gave me an idea of collaboration between stochastic processes and genetics; Suffering from chronic back pain, I really want to play a significant role in health care projects as a statistical analyst. I know that this goal will be accomplished only if having an expert's eye, and therefore, I have no doubt of my expected diligent and arduous study at the Harvard graduate school.(A bit awkward) => I am aware that such responsibilities are assumed only by the experts; I aspire to become one of them through my arduous study at the Harvard graduate school.

Thank you all for reading my statement of purpose.

- As I mentioned above, I don't think that lumbar disc disease doesn't prove what you are trying to say.
- You have a tendency to write long sentences using "and"; it is highly likely that the readers will get lost while reading these. Just break these into multiple sentences.
- Maybe include some of the researches you have done?

*Check points

문구 선택 및 문법

구성

각 주제 사이의 연결어? (4, 5 문단)

Example 들? – 어차피 간략하게 쓰게 될 텐데… 쓸지 말지 고민.