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Timothy Sun* (tim@cs.columbia.edu). *Face distributions of embeddings of complete graphs*. Preliminary report.

A longstanding open question of Archdeacon and Craft asks whether or not every complete graph has a minimum genus embedding with at most one nontriangular face. We exhibit such an embedding for each complete graph except K_8 , the complete graph on 8 vertices, and we go on to prove that no such embedding can exist for this graph. Our approach also solves a more general problem, giving a complete characterization of the possible face distributions (i.e. the number of faces of each length) realizable by minimum genus embeddings of each complete graph. We also tackle analogous questions for nonorientable and maximum genus embeddings. (Received August 16, 2017)