

Probability Cheat Sheet

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Contents

1	Terminology	1
1.1	Distribution	1
1.1.1	Joint Distribution	1

1 Terminology

1.1 Distribution

A distribution $P : \Omega \rightarrow \Gamma$ is a mapping from the probabilities of events to the probabilities of outcomes. **A distribution is defined by a *probability mass function* (discrete random variable) or a *probability density function* (continuous random variable).**

1.1.1 Joint Distribution

Say a distribution is defined over multiple **discrete** random variables, formally

$$p(X = x, Y = y)$$

, then $p(x, y)$ is called **joint distribution**.