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The demand for wearable electronics is increasing due to their capability of facile interaction of electronic devices with human body. Wearable sensors for data input to wearable electronics which can be easily mounted on clothing or attached onto the body are required. In particular, multi-functional stretchable touch/force sensors for wearable touch panel are of great interest for combination of touch/force sensors with stretchable data output device. Here we report sensitive, stretchable projected capacitive (p-cap) type touch/force sensor device where the touch and force can be detected simultaneously but distinguished. The p-cap touch/force sensor requires two electrodes to generate an electromagnetic field. Top electrode is for sensing touch/force signal, and bottom electrode is for reading the signal. We used piezoresistive materials of poly(3,4-ethylenedioxythiophene):poly(styrenesulfonate) and ionic liquid materials of EMIM-TCB for top electrode to separate touch and force stimulation. For bottom electrode, a transparent conductive electrode based on ITO with ultrathin metal sandwiched structures was used. The optical, mechanical and electrical properties of electrode materials were tested by static and dynamic stretching. The electrical sensing characteristics of this sensor were also analyzed before and after stretching. The electrical performances of the multi-functional stretchable touch/force sensors will be discussed in detail.