

統算 EM report - 統計碩一黃三騰

ON THE CONVERGENCE PROPERTIES OF THE EM ALGORITHM
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EM algorithm's advantage and disadvantage:

1. the form of the complete-data likelihood function such that M-step exist in closed form.
2. M-step has a standard statistical package that saving programming time.
3. not require large storage space.
4. slow numerical convergence.

討論問題:

- (i) EM algorithm find a local maximum or stationary value ?
- (ii) convergence of the sequence of parameter estimates generated by EM.

In section 2.1:

For a bounded sequence $L(\phi_p)$, $L(\phi_{p+1}) \geq L(\phi_p)$ implies that $L(\phi_p)$ converges monotonically to some L^* .

show that whether L^* is the global maximum of $L(\phi)$ over Ω . Or, a local maximum.

In general, if the log-likelihood L has several (local or global) maximum and stationary points, convergence of the EM sequence depends on the choice of starting point.

In section 2.2:

The convergence of $L(\phi)$ to L^* in section 2.1 dose not imply the convergence of ϕ_p to ϕ^* . It requires more stringent regularity conditions.