

## List of references of Toufik AHMED

Le principal axe de ma thématique de recherche est celui lié au transport des flux vidéo temps réel sur les réseaux de nouvelle génération. L'objectif est d'offrir à l'utilisateur un accès universel à des flux vidéo avec support de la qualité de service, n'importe où, n'importe quand et depuis n'importe quel équipement d'accès. Dans ce sillage, cet objectif recèle des verrous architecturaux sous-jacents qui ont motivé mes travaux de recherche et qui m'ont permis d'apporter une contribution originale à l'édifice.

Dans un contexte de fusion et de convergence des réseaux et des services, l'objectif est de pouvoir mettre en œuvre des services vidéo capables de s'adapter automatiquement aux ressources réseaux disponibles tout en tenant compte des caractéristiques du terminal utilisé, du profil de l'utilisateur et des mécanismes de QoS offerts dans les réseaux sous-jacents. Ainsi, il est nécessaire de caractériser chaque élément pouvant influencer directement ou indirectement la qualité du service perçue par l'utilisateur final appelée QoE (Quality of Experience). Plusieurs mécanismes de contrôle de QoS doivent être mis en œuvre pour assurer la continuité de QoS à travers différents réseaux de transport et au sein d'une pile protocolaire réseau. Ces mécanismes permettent de maintenir un niveau de QoE acceptable, préalablement défini, et qui peut être évalué par des mesures objectives ou subjectives du flux vidéo reçu. L'adaptation du service doit être réalisée sur plusieurs échelles temporelles et au niveau des différents acteurs de la chaîne du service. Le flux vidéo doit être adapté au début de la session suivant les caractéristiques statiques du terminal et de l'utilisateur puis au cours de la session suivant la variation dynamique des ressources réseaux disponibles et d'autres caractéristiques sous-jacentes. Les acteurs impliqués dans la chaîne de transport des flux doivent harmoniser leur vision pour apporter une solution de QoS de bout-en-bout.

Mes contributions de recherche dans ce domaine peuvent ainsi être classées en trois catégories : (1) le transport et le contrôle de la qualité de service vidéo sur les réseaux IP filaires, (2) le transport et le contrôle de la qualité du service vidéo sur les réseaux IP sans-fil 802.11, et (3) le transport et le contrôle de la qualité de service vidéo sur les réseaux P2P.

Ce domaine de recherche, m'a permis de développer des compétences autour de la gestion et du contrôle de la qualité de service dans les réseaux de transport (IP, sans fil 802.11 et P2P, architecture IETF DiffServ, IntServ), des technologies de l'audiovisuel (codage audio/vidéo MPEGx/H.26x, systèmes de diffusion DVB-T/H, et satellites), ainsi que des architectures de contrôle et de signalisation des services multimédia (3GPP IMS, IETF SIP/NSIS/PBNM, ISO MPEG 21, etc.).

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