# 创新性描述比对分析报告

**创新性描述：**

一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片

**对比分析结论：**

创新性结论： 有　新颖性结论： 无新颖性　创造性结论： 无(弱)

**分析结果：**

该创新性描述共包含 2 个技术特征，其中技术特征 1、2 （共 2 个）被对比专利揭示，技术特征 0 （共 0 个）未被对比专利揭示。

该创新性描述 100.00% %的技术特征被对比专利揭示，且揭示这些技术特征的最少专利数为 1 ，其中每组专利揭示比例分别为： CN103200286A(100.00%)、CN104501944A(100.00%)、CN204330128U(100.00%)、CN103890645A(100.00%) ，因此判断该创新性描述的新颖性为： 无创新性 。

该创新性描述 100.00% %的技术特征与对比专利的技术特征相似度较高，且与这些技术特征相似度较高的最少专利数为 1 ，其中每组专利相似度较高的比例分别为： CN103200286A(100.00%)、CN104501944A(100.00%)、CN204330128U(100.00%)、CN103890645A(100.00%) ，因此判断该创新性描述的创造性为： 无(弱) 。

该创新性描述的每个技术特征被对比专利揭示的具体情况如下：

- 技术特征"一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口"被对比专利中公开号为CN104501944A CN204330128U CN103200286A CN103890645A US20120019152A1 的专利揭示，且与CN104501944A CN204330128U CN103200286A CN103890645A 的技术特征相似度较高；
- 技术特征"所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片"被对比专利中公开号为CN104501944A CN204330128U CN103200286A CN103890645A 的专利揭示，且与CN104501944A CN204330128U CN103200286A CN103890645A 的技术特征相似度较高；

**分析标准：**

| 创新性定论结论 | 新颖性 | 创造性 |
|---|---|---|
| 无创新性 | 无 | / |
| | 有 | 无(弱) |
| 有创新性 | 有 | 有(中) |
| | 有 | 有(强) |

| 技术特征被揭示比例α | 覆盖被揭示技术特征的最少专利数 | 新颖性结论 |
|---|---|---|
| 0 ≤ α < 100% | / | 有 |
| α = 100% | > 3 | 有 |
| α = 100% | ≤ 3 | 无 |

| 相似技术相似比例β | 覆盖相似技术特征的最少专利数 | 创造性结论 |
|---|---|---|
| 0% ≤ β ≤ 30% | / | 有(强) |
| 30% < β ≤ 40% | > 1 | 有(强) |
| | 1 | 有(中) |
| 40% < β ≤ 70% | / | 有(中) |
| 70% < β ≤ 100% | / | 无(弱) |

# 专利CN104501944A与该创新性描述的比对报告

| 序号 | 专利CN104501944A | 技术特征相似度 | 序号 | 该创新性描述 |
|---|---|---|---|---|
| | 摘要 | | | |
| 1 | 本公开适用于光技术领域，提供了一种环境亮度的测量方法、装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 | 100.0% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 | 100.0% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 3 | 本公开提供的环境亮度测量装置及移动终端可提高环境亮度测量的准确性 | 76.4% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| | 权利要求 | | | |
| 4 | 1.一种环境亮度的测量装置，包括光传感器、设置于所述光传感器上方的取光窗口 | 100.0% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 5 | 其特征在于，所述环境亮度测量装置还包括覆盖于所述取光窗口内侧表面上，将通过所述取光窗口的环境光线变为垂直光线的楞镜 | 84.2% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 6 | 2.根据权利要求1所述的装置，其特征在于，所述楞镜为贴合在所述取光窗口内侧表面上的薄膜棱镜 | 61.4% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 7 | 3.根据权利要求2所述的装置，其特征在于，所述楞镜为将通过所述取光窗口射入的各个方向的光折射为垂直光入射到光传感器上 | 81.6% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 8 | 4.一种环境亮度的测量方法，应用于带有显示屏的移动终端上，其特征在于，包括: 获取当前环境光的入射光线 | 69.1% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 9 | 将入射的所述环境光光线通过折射垂直射入到光传感器 | 74.1% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 10 | 5.根据权利要求4所述的方法，其特征在于，所述方法还包括: 根据获取的环境光参数信息，调节显示的亮度，所述参数信息至少包括入射光的光强度值 | 69.0% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 11 | 6.根据权利要求4所述的方法，其特征在于，所述方法还包括: 判断入射光光线光强度值的大小 | 66.1% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 12 | 当判断出入射光的光强度值达到设定阈值时，调整屏幕显示亮度至匹配亮度值 | 51.3% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 13 | 7.根据权利要求4所述的方法，其特征在于，所述方法还包括: 获取所述移动终端的当前状态 | 59.5% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 14 | 根据获取到的当前状态，检测入射光的光强度值 | 52.1% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 15 | 根据入射光的光强度值，调节屏幕显示的亮度 | 53.4% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 16 | 8.根据权利要求7所述的方法，其特征在于，所述获取所述移动终端的中的光传感器当前状态，包括: 面对环境光光源状态 | 66.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 17 | 或 侧向环境光光源状态 | | | |
| 18 | 或 背向环境光光源状态 | | | |
| 19 | 9.根据权利要求8所述的方法，其特征在于，当获取到移动终端中的光传感器面向入射光光源时，在设定调整屏幕亮度的策略中执行升高级别操作，所述升高级别操作为比所述设定调整屏幕亮度策略调整的亮度高一设定亮度值的亮度调节操作 | 77.8% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 20 | 当获取到移动终端中的光传感器背向入射光光源时，在设定调整屏幕亮度的策略中执行降低级别操作，所述降低级别操作为比所述设定调整屏幕亮度策略调整的亮度低一设定亮度值的亮度调节操作 | 70.7% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 21 | 当获取到移动终端中的光传感器侧向入射光光源时，在设定调整屏幕亮度的策略中执行增加入射光光线强度操作，所述增加入射光光线强度操作为扩大光源入射角角度 | 68.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 22 | 10.一种移动终端，包括如权利要求1-3任一所述环境亮度的测量装置 | 72.9% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |

# 专利CN204330128U与该创新性描述的比对报告

| 序号 | 专利CN204330128U | 技术特征相似度 | 序号 | 该创新性描述 |
|---|---|---|---|---|
| | 摘要 | | | |
| 1 | 本实用新型适用于光技术领域，提供了一种环境亮度的测量装置及移动终端。所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 | 100.0% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 | 100.0% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 3 | 本实用新型提供的环境亮度测量装置及移动终端可提高环境亮度测量的准确性 | 76.4% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| | 权利要求 | | | |
| 4 | 1.一种环境亮度的测量装置，包括光传感器、设置于所述光传感器上方的取光窗口 | 100.0% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 5 | 其特征在于，所述环境亮度测量装置还包括覆盖于所述取光窗口内侧表面上，将通过所述取光窗口的环境光线变为垂直光线的楞镜 | 84.2% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 6 | 2.根据权利要求1所述的装置，其特征在于，所述楞镜为贴合在所述取光窗口内侧表面上的薄膜棱镜 | 61.4% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 7 | 3.根据权利要求2所述的装置，其特征在于，所述楞镜为将通过所述取光窗口射入的各个方向的光折射为垂直光入射到光传感器上 | 81.6% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 8 | 4.一种环境亮度的测量装置，应用于带有显示屏的移动终端上，其特征在于，包括: 获取模块，用于获取当前环境光的入射光线 | 74.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 9 | 调整入射光模块，用于将入射的所述环境光光线通过折射垂直射入到光传感器 | 68.0% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 10 | 5.根据权利要求4所述的装置，其特征在于，所述装置还包括: 调节模块，用于根据获取的环境光参数信息，调节显示的亮度，所述参数信息至少包括入射光的光强度值 | 71.2% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 11 | 6.根据权利要求4所述的装置，其特征在于，所述装置还包括: 判断模块，用于判断入射光光线光强度值的大小 | 71.0% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 12 | 调整模块，还用于当判断出入射光的光强度值达到设定阈值时，调整屏幕显示亮度至匹配亮度值 | 54.4% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 13 | 7.根据权利要求4所述的装置，其特征在于，所述装置还包括: 获取单元，还用于获取所述移动终端的当前状态 | 62.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 14 | 检测模块，用于根据获取到的当前状态，检测入射光的光强度值 | | | |
| 15 | 调整模块，还用于根据入射光的光强度值，调节屏幕显示的亮度 | 54.7% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 16 | 8.根据权利要求7所述的装置，其特征在于，所述获取模块，包括: 用于获取面对环境光光源状态 | 63.3% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 17 | 或 用于获取侧向环境光光源状态 | 55.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 18 | 或 用于获取背向环境光光源状态 | 53.6% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 19 | 9.根据权利要求8所述的装置，其特征在于，当获取模块获取到移动终端中的光传感器面向入射光光源时，在设定调整屏幕亮度的策略中执行升高级别操作，所述升高级别操作为比所述设定调整屏幕亮度策略调整的亮度高一设定亮度值的亮度调节操作 | 79.1% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 20 | 当获取模块获取到移动终端中的光传感器背向入射光光源时，在设定调整屏幕亮度的策略中执行降低级别操作，所述降低级别操作为比所述设定调整屏幕亮度策略调整的亮度低一设定亮度值的亮度调节操作 | 70.7% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 21 | 当获取模块获取到移动终端中的光传感器侧向入射光光源时，在设定调整屏幕亮度的策略中执行增加入射光光线强度操作，所述增加入射光光线强度操作为扩大光源入射角角度 | 69.1% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 22 | 10.一种移动终端，包括如权利要求1-9任一所述环境亮度的测量装置 | 72.9% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |

# 专利CN103200286A与该创新性描述的比对报告

| 序号 | 专利CN103200286A | 技术特征相似度 | 序号 | 该创新性描述 |
|---|---|---|---|---|
| | 摘要 | | | |
| 1 | 本发明适用于光技术领域，提供了一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 | 100.0% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从平行光线变为非平行光线的散光镜 | 96.6% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 3 | 本发明提供的环境亮度测量装置及移动终端可提高环境亮度测量的准确性 | 72.5% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| | 权利要求 | | | |
| 4 | 1.一种环境亮度测量装置，包括光传感器、设置于所述光传感器上方的取光窗口 | 100.0% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 5 | 其特征在于，所述环境亮度测量装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从平行光线变为非平行光线的散光镜 | 91.4% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 6 | 2.如权利要求1所述的装置，其特征在于，所述散光镜为贴合在所述取光窗口上的薄膜 | 62.3% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 7 | 3.如权利要求1或2所述的装置，其特征在于，所述散光镜放置于所述散光镜的上方或下方 | 58.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 8 | 4.如权利要求1或2所述的装置，其特征在于，所述散光镜为毛玻璃或白色纸张 | 51.5% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 9 | 5.一种移动终端，其特征在于，包括如权利要求1至4中任一项所述的环境亮度测量装置 | 63.4% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |

# 专利CN103890645A与该创新性描述的比对报告

| 序号 | 专利CN103890645A | 技术特征相似度 | 序号 | 该创新性描述 |
|---|---|---|---|---|
| | 摘要 | | | |
| 1 | 本发明提供用于基于环境光条件而控制显示器的照明的包含编码于计算机存储媒体上的计算机程序的系统、方法及设备 | 60.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 2 | 在一个方面中，一种显示装置可包含显示器及经配置以给所述显示器提供补充光的辅助光源 | 54.5% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 3 | 所述显示装置可进一步包含传感器系统，所述传感器系统经配置以测量来自宽范围的方向的环境光的漫射照度且经配置以测量来自相对窄范围的方向的所述环境光的定向照度 | 71.7% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 4 | 所述显示装置可进一步包含控制器，所述控制器经配置以调整所述辅助光源以给所述显示器提供一定量的补充光 | 60.0% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 5 | 所述补充光量可至少部分地基于所述环境光的所述所测量定向照度及所述所测量漫射照度 | 69.9% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| | 权利要求 | | | |
| 6 | 1.一种显示装置，其包括: 显示器 | 61.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 7 | 辅助光源，其经配置以给所述显示器提供补充光 | 61.2% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 8 | 传感器系统，其经配置以测量: 来自宽范围的方向的环境光的漫射照度 | 65.3% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 9 | 以及 来自相对窄范围的方向的所述环境光的定向照度 | 63.9% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 10 | 以及 控制器，其与所述传感器系统通信，所述控制器经配置以调整所述辅助光源以给所述显示器提供一定量的补充光，所述补充光量至少部分地基于所述环境光的所述所测量定向照度及所述所测量漫射照度 | 70.1% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 11 | 2.根据权利要求1所述的显示装置，其中所述显示器包含反射式显示器 | 60.8% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 12 | 3.根据权利要求2所述的显示装置，其中所述反射式显示器包含干涉式调制器 | 57.8% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 13 | 4.根据权利要求1所述的显示装置，其中所述传感器系统包含经配置以感测来自至少两个方向的环境光的至少一个传感器 | 59.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 14 | 5.根据权利要求4所述的显示装置，其中所述至少一个传感器包含经配置以测量所述漫射照度的漫射光传感器及经配置以测量所述定向照度的定向光传感器 | 61.0% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 15 | 6.根据权利要求4所述的显示装置，其中所述至少一个传感器包含多个定向光传感器，每一定向光传感器经配置以测量在环绕一万向的立体角内接收的所述环境光的照度，所述立体角实质上小于2 31球面度 | 67.5% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 16 | 7.根据权利要求1所述的显示装 置，其中所述控制器经配置以至少部分地基于所述所测量定向照度与所述所测量漫射照度的比率而调整所述辅助光源 | 60.6% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 17 | 8.根据权利要求1所述的显示装置，其中所述控制器经配置以至少部分地基于所述所测量定向照度与所述所测量漫射照度的和而调整所述辅助光源 | 63.6% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 18 | 9.根据权利要求1所述的显示装置，其中所述控制器经配置以基于到定向环境光源的方向而调整所述辅助光源 | 60.6% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 19 | 10.根据权利要求9所述的显示装置，其中到所述定向环境光源的所述方向是至少部分地基于由所述传感器系统测量的所述定向照度及所述漫射照度而确定的 | 69.0% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 20 | 11.根据权利要求10所述的显示装置，其中所述控制器经配置以至少部分地基于观看者的位置而调整所述辅助光源 | 56.2% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 21 | 12.根据权利要求1所述的显示装置，其进一步包括: 处理器，其经配置以与所述显示器通信，所述处理器经配置以处理图像数据 | 56.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 22 | 以及 存储器装置，其经配置以与所述处理器通信 | 60.0% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 23 | 13.根据权利要求12所述的显示装置，其进一步包括: 驱动器电路，其经配置以将至少一个信号发送到所述显示器 | 56.7% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 24 | 14.根据权利要求13所述的显示装置，其进一步包括: 驱动器控制器，其经配置以将所述图像数据的至少一部分发送到所述驱动器电路 | 57.3% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 25 | 15.根据权利要求12所述的显示装置，其进一步包括: 图像源模块，其经配置以将所述图像数据发送到所述处理器 | | | |
| 26 | 16.根据权利要求15所述的显示装置，其中所述图像源模块包含接收器、收发器及发射器中的至少一者 | 62.7% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 27 | 17.根据权利要求12所述的显示装置，其进一步包括: 输入装置，其经配置以接收输入数据并将所述输入数据传递到所述处理器 | 58.4% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 28 | 18.一种显示装置，其包括: 显示器 | 61.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 29 | 辅助光源 | 69.4% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 30 | 用于感测环境光的装置，所述用于感测环境光的装置经配置以测量来自宽范围的方向的所述环境光的漫射照度且经配置以测量来自相对窄范围的方向的所述环境光的定向照度 | 64.5% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 31 | 以及 控制器，其与所述用于感测环境光的装置通信，所述控制器经配置以至少部分地基于所述环境光的所述所测量定向照度及所述所测量漫射照度而调整所述辅助光源 | 66.9% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 32 | 19.根据权利要求18所述的显示装置，其中所述显示器包含反射式显示器 | 60.8% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 33 | 20.根据权利要求19所述的显示装置，其中所述反射式显示器包含干涉式调制器 | 54.9% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 34 | 21.根据权利要求18所述的显示装置，其中所述辅助光源包含前光 | 52.1% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 35 | 22.根据权利要求18所述的显示装置，其中所述用于感测环境光的装置包含经配置以感测来自至少两个方向的环境光的至少一个传感器 | 59.2% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 36 | 23.根据权利要求22所述的显示装置，其中所述至少一个传感器包含经配置以测量所述漫射照度的漫射光 传感器及经配置以测量所述定向照度的定向光传感器 | 59.5% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 37 | 24.根据权利要求22所述的显示装置，其中所述至少一个传感器包含多个定向光传感器，每一定向光传感器经配置以测量在环绕一方向的立体角内接收的所述环境光的照度，所述立体角实质上小于2 31球面度 | 68.4% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 38 | 25.根据权利要求18所述的显示装置，其中所述控制器经配置以至少部分地基于所述所测量定向照度与所述所测量漫射照度的比率而调整所述辅助光源 | 62.7% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 39 | 26.根据权利要求18所述的显示装置，其中所述控制器经配置以至少部分地基于所述所测量定向照度与所述所测量漫射照度的和而调整所述辅助光源 | 63.6% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 40 | 27.根据权利要求18所述的显示装置，其中所述控制器经配置以基于到定向环境光源的方向而调整所述辅助光源 | 63.1% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 41 | 28.根据权利要求27所述的显示装置，其中所述控制器经配置以基于观看者的位置而调整所述辅助光源 | 56.4% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 42 | 29.一种控制显示装置的显示器的照明的方法，所述显示装置具有经配置以给所述显示器提供补充光的辅助光源，所述显示装置具有漫射光传感器及定向光传感器，所述方法包括: 经由所述漫射光传感器测量来自宽范围的方向的环境光的漫射照度 | 69.3% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 43 | 经由所述定向光传感器测量来自相对窄范围的方向的所述环境光的定向照度 | 69.4% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 44 | 以及 经由硬件处理器对指令的执行，至少部分地基于所述环境光的所述所测量定向照度及所述所测量漫射照度而调整所述辅助光源 | 63.0% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 45 | 30.根据权利要求29所述的方法，其中调整所述辅助光源包含至少部分地基于所述所测量定向照度与所述所测量漫射照度的比率而调整所述辅助光源 | 58.6% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 46 | 31.根据权利要求29所述的方法，其中调整所述辅助光源包含至少部分地基于所述所测量定向照度与所述所测量漫射照度的和而调整所述辅助光源 | 58.8% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 47 | 32.根据权利要求29所述的方法，其中调整所述辅助光源是基于到定向环境光源的方向 | 58.5% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 48 | 33.根据权利要求32所述的方法，其中调整所述辅助光源是基于观看者的位置 | | | |
| 49 | 34.一种上面存储有用于控制显示装置的显示器的照明的指令的非暂时有形计算机存储媒体，所述指令在由计算系统执行时致使所述计算系统执行包括以下各项的操作: 从计算机可读媒体接收来自相对窄范围的方向的环境光的定向照度的测量 | 69.5% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 50 | 从计算机可读媒体接收来自宽范围的方向的环境光的漫射照度的测量 | 53.0% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 51 | 至少部分地基于所述环境光的所述定向照度的所述测量及所述漫射照度的所述测量而确定额外照明条件 | 64.3% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 52 | 以及 将至少部分地基于所述额外照明条件的照明调整发射到经配置以给所述显示器提供光的光源 | 64.3% | 2 | 所述装置还包括覆盖所述取光窗口、将通过所述取光窗口的环境光从入射光线变为垂直光线的楞镜片 |
| 53 | 35.根据权利要求34所述的非暂时有形计算机存储媒体，其中接收环境光的所述漫射照度包含接收针对不同方向的多个定向照度 | 55.9% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 54 | 36.根据权利要求34所述的非暂时有形计算机存储媒体，其中确定额外照明条件包含存取使漫射照度与定向照度对所述漫射照度的比率相关的查找表 | 51.6% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 55 | 37.根据权利要求34所述的非暂时有形计算机存储媒体，其中确定额外照明条件包含存取使漫射照度与定向照度对所述漫射照度的比率相关的公式 | 51.3% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |
| 56 | 38.根据权利要求34所述的非暂时有形计算机存储媒体，其中确定额外照明条件包含存取至少部分地基于所述所测量定向照度与所述所测量漫射照度的和的公式 | 58.5% | 1 | 一种环境亮度测量装置及移动终端，所述环境亮度测量装置包括光传感器、设置于所述光传感器上方的取光窗口 |

# 专利US20120019152A1与该创新性描述的比对报告

| 序号 | 专利US20120019152A1 | 技术特征相似度 | 序号 | 该创新性描述 |
|---|---|---|---|---|
| | 摘要 | | | |
| 1 | Methods and devices are provided for controlling the brightness of a display for an electronic device based on ambient light conditions | | | |
| 2 | In one embodiment, an electronic device may employ one or more brightness adjustment profiles for changing the brightness of a display based on ambient light levels and/or the angle of incidence of one or more ambient light sources | | | |
| 3 | In certain embodiments, one or more ambient light sensors may be designed to perceive the ambient light level differently based on the angle of incidence of a light source | | | |
| 4 | The perceived ambient light level may then be used to adjust the display brightness based on the one or more brightness adjustment profiles | | | |
| 5 | In other embodiments, one or more ambient light sensors may be designed to detect the angle of incidence of an ambient light source | | | |
| 6 | In these embodiments, the detected angle and the ambient light level may be used to adjust the display brightness | | | |
| | 权利要求 | | | |
| 7 | An electronic device, comprising: a display comprising a backlight | | | |
| 8 | a sensing device configured to detect an ambient light angle | 53.2% | 1 | A brightness measuring device and a mobile terminal, the ambient brightness measuring device comprises a light window arranged above the light sensor, the light sensor |
| 9 | and a display controller operably coupled to the backlight and configured to adjust a brightness of the backlight based on the detected ambient light angle | | | |
| 10 | a display comprising a backlight | | | |
| 11 | a sensing device configured to detect an ambient light angle | 53.2% | 1 | A brightness measuring device and a mobile terminal, the ambient brightness measuring device comprises a light window arranged above the light sensor, the light sensor |
| 12 | anda display controller operably coupled to the backlight and configured to adjust a brightness of the backlight based on the detected ambient light angle | | | |
| 13 | The electronic device of claim 1, wherein the sensing device comprises an ambient light sensor | | | |
| 14 | The electronic device of claim 1, wherein the sensing device comprises a camera | | | |
| 15 | The electronic device of claim 1, comprising a user interface configured to receive a user input that selects an angular adjustment profile for the backlight, wherein the angular adjustment profiles specifies angular adjustments to the brightness based on the detected ambient light angle | | | |
| 16 | The electronic device of claim 1, comprising one or more ambient light sensors configured to detect an ambient light level, wherein the display controller is configured to adjust the brightness based on the detected ambient light level | | | |
| 17 | An electronic device, comprising: a display comprising a backlight | | | |
| 18 | one or more ambient light sensors configured to detect a level of ambient light and an angle of incidence of the ambient light | | | |
| 19 | and a display controller operably coupled to the backlight and configured to adjust the detected level of ambient light based on the angle of incidence to produce an adjusted ambient light level and to adjust a brightness of the backlight based on the adjusted ambient light level | | | |
| 20 | a display comprising a backlight | | | |
| 21 | one or more ambient light sensors configured to detect a level of ambient light and an angle of incidence of the ambient light | | | |
| 22 | anda display controller operably coupled to the backlight and configured to adjust the detected level of ambient light based on the angle of incidence to produce an adjusted ambient light level and to adjust a brightness of the backlight based on the adjusted ambient light level | | | |
| 23 | The electronic device of claim 6, wherein the adjusted ambient light level is approximately equal to the detected level of ambient light multiplied by the cosine of the angle of incidence | | | |
| 24 | The electronic device of claim 6 | | | |
| 25 | wherein the adjusted ambient light level is approximately equal to or greater than the detected level of ambient light multiplied by the cosine of the angle of incidence and less than the detected level of ambient light when the angle of incidence is greater than or less than ninety degrees | | | |
| 26 | The electronic device of claim 6, comprising a user interface configured to receive a user input that enables adjustment of the detected level of ambient light based on the angle of incidence | | | |
| 27 | A method, comprising: detecting an ambient light level for an ambient light source | | | |
| 28 | detecting an angle of incidence of the ambient light from the ambient light source | | | |
| 29 | determining an angular adjustment for the detected ambient light level based on the detected angle of incidence | | | |
| 30 | and adjusting a brightness of a backlight based on the angular adjustment | | | |
| 31 | detecting an ambient light level for an ambient light source | | | |
| 32 | detecting an angle of incidence of the ambient light from the ambient light source | | | |
| 33 | determining an angular adjustment for the detected ambient light level based on the detected angle of incidence | | | |
| 34 | andadjusting a brightness of a backlight based on the angular adjustment | | | |
| 35 | The method of claim 10, wherein determining an angular adjustment comprises determining an adjusted ambient light level approximately equal to the detected ambient light level multiplied by the cosine of the detected angle of incidence | | | |
| 36 | The method of claim 10 | | | |
| 37 | wherein determining an angular adjustment comprises determining an adjusted ambient light level approximately equal to or greater than the detected ambient light level multiplied by the cosine of the detected angle of incidence and approximately less than the detected ambient light level when the angle of incidence is greater than or less than ninety degrees | | | |
| 38 | The method of claim 10 | | | |
| 39 | comprising adjusting the detected ambient light level by the angular adjustment to produce an adjusted ambient light level | | | |
| 40 | wherein adjusting a brightness of the backlight comprises determining a brightness level for the backlight that corresponds to the adjusted ambient light level | | | |
| 41 | The method of claim 10, wherein adjusting a brightness of the backlight comprises determining a brightness level for the backlight that corresponds to the detected ambient light level and applying the angular adjustment to the determined brightness level | | | |
| 42 | The method of claim 10, comprising verifying enablement of an angular adjustment for the backlight | | | |
| 43 | The method of claim 10, comprising: detecting multiple ambient light levels each corresponding to a different ambient light source: detecting multiple angles of incidence each corresponding to one of the different ambient light sources | | | |
| 44 | and weighting the detected ambient light levels based on their corresponding detected angle of incidence | | | |
| 45 | detecting multiple ambient light levels each corresponding to a different ambient light source:detecting multiple angles of incidence each corresponding to one of the different ambient light sources | | | |
| 46 | andweighting the detected ambient light levels based on their corresponding detected angle of incidence | | | |
| 47 | Non-transitory computer-readable storage media comprising instructions for: adjusting a detected ambient light level to produce an adjusted ambient light level that compensates for the angle of incidence of ambient light | | | |
| 48 | and adjusting a brightness of a backlight based on the adjusted ambient light level | | | |
| 49 | adjusting a detected ambient light level to produce an adjusted ambient light level that compensates for the angle of incidence of ambient light | | | |
| 50 | andadjusting a brightness of a backlight based on the adjusted ambient light level | | | |
| 51 | The non-transitory computer-readable storage media of claim 17, comprising instructions for determining the adjusted ambient light level to be approximately equal to the detected ambient light level multiplied by the cosine of the angle of incidence of ambient light | | | |
| 52 | The non-transitory computer-readable storage media of claim 17, comprising instructions for determining the adjusted ambient light level to be approximately equal to or greater than the detected ambient light level multiplied by the cosine of the angle of incidence of ambient light | | | |
| 53 | An electronic device, comprising: a display comprising a backlight | | | |
| 54 | an ambient light sensor configured to detect an ambient light level for one or more ambient light sources each producing an emitted ambient light level measured as ambient light contacting the display at a ninety degree angle of incidence | | | |
| 55 | wherein the detected ambient light level is a function of an actual angle of incidence of each of the one or more ambient light sources with respect to the display | | | |
| 56 | and a display controller operably coupled to the backlight and configured to adjust a brightness of the backlight based on the detected ambient light level | | | |
| 57 | a display comprising a backlight | | | |
| 58 | an ambient light sensor configured to detect an ambient light level for one or more ambient light sources each producing an emitted ambient light level measured as ambient light contacting the display at a ninety degree angle of incidence | | | |
| 59 | wherein the detected ambient light level is a function of an actual angle of incidence of each of the one or more ambient light sources with respect to the display | | | |
| 60 | anda display controller operably coupled to the backlight and configured to adjust a brightness of the backlight based on the detected ambient light level | | | |
| 61 | The electronic device of claim 20, wherein the detected ambient light level is approximately equal to a sum of each of the emitted ambient light levels multiplied by the cosine of each of the actual angles of incidence | | | |
| 62 | The electronic device of claim 20, wherein the detected ambient light level is greater than or approximately equal to a sum of each of the emitted ambient light levels multiplied by the cosine of each of the actual angles of incidence | | | |
| 63 | The electronic device of claim 20, wherein the detected ambient light level is approximately equal to the emitted ambient light level when the actual angle of incidence is approximately ninety degrees | | | |
| 64 | The electronic device of claim 20, wherein the display controller is configured to adjust the brightness using a brightness adjustment profile that identifies brightness levels for the backlight based on the detected ambient light level | | | |

# 专利US9332616B1与该创新性描述的比对报告

| 序号 | 专利US9332616B1 | 技术特征相似度 | 序号 | 该创新性描述 |
|---|---|---|---|---|
| | 摘要 | | | |
| 1 | A path light that utilizes an ambient light sensor to determine the lighting conditions may experience feedback from its light source if it determines that the lighting conditions are appropriate to illuminate the path light's light source | | | |
| 2 | The path light, as disclosed herein, may compute an offset value to ascertain the amount of feedback from the light source | | | |
| 3 | Upon learning the offset value, the path light may subtract the offset value from a detected amount of light to determine whether the lighting conditions of its surroundings still meet a threshold level of darkness for the path light to illuminate | | | |
| | 权利要求 | | | |
| 4 | A computer-implemented method, comprising: determining a first ambient light value based on a first amount of light detected by an ambient light sensor | | | |
| 5 | illuminating a light source integrated into a device with the ambient light sensor | | | |
| 6 | determining a second ambient light value based on a second amount of light detected by the ambient light sensor when the light source is illuminated at an intensity | | | |
| 7 | computing an offset value representing a difference between the first ambient light value and the second ambient light value | | | |
| 8 | detecting a motion computing a third ambient light value based on a third amount of light detected by the ambient light sensor and the offset value | | | |
| 9 | detecting a motion and determining an illumination level of the light source based on the third ambient light value and the motion | | | |
| 10 | determining a first ambient light value based on a first amount of light detected by an ambient light sensor | | | |
| 11 | illuminating a light source integrated into a device with the ambient light sensor | | | |
| 12 | determining a second ambient light value based on a second amount of light detected by the ambient light sensor when the light source is illuminated at an intensity | | | |
| 13 | computing an offset value representing a difference between the first ambient light value and the second ambient light value | | | |
| 14 | detecting a motioncomputing a third ambient light value based on a third amount of light detected by the ambient light sensor and the offset value | | | |
| 15 | detecting a motion anddetermining an illumination level of the light source based on the third ambient light value and the motion | | | |
| 16 | The method of claim 1, wherein the offset value is dynamically adjusted based on data generated by the ambient light sensor over a period of time | | | |
| 17 | The method of claim 1, wherein the first ambient light value and the second ambient light value are determined in a dark environment | | | |
| 18 | The method of claim 3, wherein the dark environment comprises an ambient light intensity of not more than 60 lux | | | |
| 19 | The method of claim 1, wherein the intensity of the light source is not more than 150 lux | | | |
| 20 | The method of claim 1, wherein the intensity of the light source is not more than 500 lux | | | |
| 21 | The method of claim 1, wherein the intensity of the light source is in a range from 125 lux to 550 lux inclusive | | | |
| 22 | The method of claim 1, wherein the device comprises a single device | | | |
| 23 | The method of claim 1, further comprising determining the illumination level of the light source based on a time of day | | | |
| 24 | The method of claim 1, wherein the motion is detected within a field of view of a different device and not within the field of view of the device that contains the light source and the ambient light sensor | | | |
| 25 | The method of claim 1, further comprising transmitting, from the device, a signal indicating the motion | | | |
| 26 | A path light device, comprising: an ambient light sensor | | | |
| 27 | a light source a processor communicatively coupled to the light source and the ambient light sensor, the processor configured to: determine a first ambient light value based on a first amount of light detected by the ambient light sensor | | | |
| 28 | a light source illuminating the light source | | | |
| 29 | a light source determine a second ambient light value based on a second amount of light detected by the ambient light sensor when the light source is illuminated at an intensity | | | |
| 30 | a light source compute an offset value representing a difference between the first ambient light value and the second ambient light value | | | |
| 31 | a light source detect a motion compute a third ambient light value based on a third amount of light detected by the ambient light sensor and the offset value | | | |
| 32 | a light source detect a motion and determine an illumination level of the light source based on the third ambient light value and the motion | | | |
| 33 | an ambient light sensor | | | |
| 34 | a light sourcea processor communicatively coupled to the light source and the ambient light sensor, the processor configured to: determine a first ambient light value based on a first amount of light detected by the ambient light sensor | | | |
| 35 | a light source illuminating the light source | | | |
| 36 | a light source determine a second ambient light value based on a second amount of light detected by the ambient light sensor when the light source is illuminated at an intensity | | | |
| 37 | a light source compute an offset value representing a difference between the first ambient light value and the second ambient light value | | | |
| 38 | a light source detect a motion compute a third ambient light value based on a third amount of light detected by the ambient light sensor and the offset value | | | |
| 39 | a light source detect a motion and determine an illumination level of the light source based on the third ambient light value and the motion | | | |
| 40 | determine a first ambient light value based on a first amount of light detected by the ambient light sensor | | | |
| 41 | illuminating the light source | | | |
| 42 | determine a second ambient light value based on a second amount of light detected by the ambient light sensor when the light source is illuminated at an intensity | | | |
| 43 | compute an offset value representing a difference between the first ambient light value and the second ambient light value | | | |
| 44 | detect a motioncompute a third ambient light value based on a third amount of light detected by the ambient light sensor and the offset value | | | |
| 45 | detect a motion anddetermine an illumination level of the light source based on the third ambient light value and the motion | | | |
| 46 | The path light device of claim 12, wherein the offset value is dynamically adjusted based on data generated by the ambient light sensor over a period of time | | | |
| 47 | The path light device of claim 12, wherein the first ambient light value and the second ambient light value are determined in a dark environment | | | |
| 48 | The path light device of claim 14, wherein the dark environment comprises an ambient light intensity of not more than 60 lux | | | |
| 49 | The path light device of claim 12, wherein the intensity of the light source is not more than 150 lux | | | |
| 50 | The path light device of claim 12, wherein the intensity of the light source is not more than 500 lux | | | |
| 51 | The path light device of claim 12, wherein the intensity of the light source is in a range from 125 lux to 550 lux inclusive | | | |
| 52 | The path light device of claim 12, the processor further configured to determine the illumination level of the light source based on a time of day | | | |
| 53 | The path light device of claim 12, wherein the processor is configured to detect the motion within a field of view of a different device and not within the field of view of the path light device | | | |
| 54 | The system of claim 12, the processor further configured to transmit, from the path light device, a signal indicating the motion | | | |
| 55 | A computer-implemented method | | | |
| 56 | comprising: obtaining an offset value for a path light corresponding to a difference between a first amount of light detected by an ambient light sensor of the path light when a light source of the path light is illuminated at an intensity and a second amount of light detected by the ambient light sensor when the light source is inactive | | | |
| 57 | receiving, by the path light, an activation signal | | | |
| 58 | activating the light source at the intensity | | | |
| 59 | detecting a third amount of light by the ambient light sensor | | | |
| 60 | subtracting the offset value from the third amount of light to produce an adjusted light level | | | |
| 61 | and determining if the adjusted light level is below a threshold | | | |
| 62 | obtaining an offset value for a path light corresponding to a difference between a first amount of light detected by an ambient light sensor of the path light when a light source of the path light is illuminated at an intensity and a second amount of light detected by the ambient light sensor when the light source is inactive | | | |
| 63 | receiving, by the path light, an activation signal | | | |
| 64 | activating the light source at the intensity | | | |
| 65 | detecting a third amount of light by the ambient light sensor | | | |
| 66 | subtracting the offset value from the third amount of light to produce an adjusted light level | | | |
| 67 | anddetermining if the adjusted light level is below a threshold | | | |
| 68 | The method of claim 22, further comprising illuminating the light source of the path light in response to a determination that the adjusted light level is below the threshold | | | |
| 69 | A computer-implemented method | | | |
| 70 | comprising: determining a first offset value for a path light corresponding to a difference between a first amount of light detected by an ambient light sensor of the path light when a light source of the path light is illuminated at an intensity and a second amount of light detected by the ambient light sensor when the light source is inactive | | | |
| 71 | determining a first environmental light amount by the ambient light sensor | | | |
| 72 | applying the first offset value to the environmental light amount | | | |
| 73 | receiving a re-test signal | | | |
| 74 | responsive to the re-test signal | | | |
| 75 | determining a second offset value for the path light corresponding to a difference between a third amount of light detected by the ambient light sensor of the path light when the light source of the path light is illuminated at the intensity and a fourth amount of light detected by the ambient light sensor when the light source is inactive | | | |
| 76 | determining a second environmental light amount by the ambient light sensor | | | |
| 77 | and applying the second offset value to the second environmental light amount | | | |
| 78 | determining a first offset value for a path light corresponding to a difference between a first amount of light detected by an ambient light sensor of the path light when a light source of the path light is illuminated at an intensity and a second amount of light detected by the ambient light sensor when the light source is inactive | | | |
| 79 | determining a first environmental light amount by the ambient light sensor | | | |
| 80 | applying the first offset value to the environmental light amount | | | |
| 81 | receiving a re-test signal | | | |
| 82 | responsive to the re-test signal | | | |
| 83 | determining a second offset value for the path light corresponding to a difference between a third amount of light detected by the ambient light sensor of the path light when the light source of the path light is illuminated at the intensity and a fourth amount of light detected by the ambient light sensor when the light source is inactive | | | |
| 84 | determining a second environmental light amount by the ambient light sensor | | | |
| 85 | andapplying the second offset value to the second environmental light amount | | | |
| 86 | The method of claim 24, further comprising: determining that the second environmental light amount is below a threshold | | | |
| 87 | and illuminating the light source of the path light in response to a determination that the second environmental light amount is below the threshold | | | |
| 88 | determining that the second environmental light amount is below a threshold | | | |
| 89 | andilluminating the light source of the path light in response to a determination that the second environmental light amount is below the threshold | | | |

# 专利US8686981B2与该创新性描述的比对报告

| 序号 | 专利US8686981B2 | 技术特征相似度 | 序号 | 该创新性描述 |
|---|---|---|---|---|
| | 摘要 | | | |
| 1 | Methods and devices are provided for controlling the brightness of a display for an electronic device based on ambient light conditions | | | |
| 2 | In one embodiment, an electronic device may employ one or more brightness adjustment profiles for changing the brightness of a display based on ambient light levels and/or the angle of incidence of one or more ambient light sources | | | |
| 3 | In certain embodiments, one or more ambient light sensors may be designed to perceive the ambient light level differently based on the angle of incidence of a light source | | | |
| 4 | The perceived ambient light level may then be used to adjust the display brightness based on the one or more brightness adjustment profiles | | | |
| 5 | In other embodiments, one or more ambient light sensors may be designed to detect the angle of incidence of an ambient light source | | | |
| 6 | In these embodiments, the detected angle and the ambient light level may be used to adjust the display brightness | | | |
| | 权利要求 | | | |
| 7 | An electronic device, comprising: a display comprising a backlight | | | |
| 8 | a sensing device configured to detect an ambient light level and an angle of incidence value of ambient light | | | |
| 9 | and a display controller operably coupled to the backlight and configured to: determine an angular adjustment profile based upon the angle of incidence value | | | |
| 10 | wherein the angular adjustment profile defines adjustments to the detected ambient light level based upon the angle of incidence | | | |
| 11 | determine an adjusted ambient light level by multiplying the ambient light level by the angular adjustment profile | | | |
| 12 | and adjust a brightness of the backlight based on the adjusted ambient light level | | | |
| 13 | a display comprising a backlight | | | |
| 14 | a sensing device configured to detect an ambient light level and an angle of incidence value of ambient light | | | |
| 15 | anda display controller operably coupled to the backlight and configured to: determine an angular adjustment profile based upon the angle of incidence value | | | |
| 16 | wherein the angular adjustment profile defines adjustments to the detected ambient light level based upon the angle of incidence | | | |
| 17 | determine an adjusted ambient light level by multiplying the ambient light level by the angular adjustment profile | | | |
| 18 | and adjust a brightness of the backlight based on the adjusted ambient light level | | | |
| 19 | determine an angular adjustment profile based upon the angle of incidence value | | | |
| 20 | wherein the angular adjustment profile defines adjustments to the detected ambient light level based upon the angle of incidence | | | |
| 21 | determine an adjusted ambient light level by multiplying the ambient light level by the angular adjustment profile | | | |
| 22 | andadjust a brightness of the backlight based on the adjusted ambient light level | | | |
| 23 | The electronic device of claim 1, wherein the sensing device comprises an ambient light sensor and the display controller is configured to determine the angular adjustment profile as the cosine of the angle of incidence value | | | |
| 24 | The electronic device of claim 1, wherein the sensing device comprises a camera | | | |
| 25 | The electronic device of claim 1 | | | |
| 26 | comprising a user interface configured to receive a user input that selects a particular angular adjustment profile for the backlight | | | |
| 27 | wherein the particular angular adjustment profile specifies angular-based adjustments to the brightness based on the detected ambient light angle to simulate a reflectivity associated with hard copy material | | | |
| 28 | The electronic device of claim 1, comprising a user interface configured to receive a user input that selectively enables or disables adjustment of the brightness of the backlight based upon the angle of incidence of the ambient light | | | |
| 29 | An electronic device, comprising: a display comprising a backlight | | | |
| 30 | one or more ambient light sensors configured to detect a level of ambient light and an angle of incidence value of the ambient light | | | |
| 31 | and a display controller operably coupled to the backlight and configured to: determine an angular adjustment profile based at least on the level of ambient light and a function of the angle of incidence value | | | |
| 32 | wherein the angular adjustment profile defines adjustments to the detected ambient light level based upon the angle of incidence | | | |
| 33 | adjust the detected level of ambient light based on the angular adjustment profile to produce an adjusted ambient light level | | | |
| 34 | and adjust a brightness of the backlight based on the adjusted ambient light level | | | |
| 35 | a display comprising a backlight | | | |
| 36 | one or more ambient light sensors configured to detect a level of ambient light and an angle of incidence value of the ambient light | | | |
| 37 | anda display controller operably coupled to the backlight and configured to: determine an angular adjustment profile based at least on the level of ambient light and a function of the angle of incidence value | | | |
| 38 | wherein the angular adjustment profile defines adjustments to the detected ambient light level based upon the angle of incidence | | | |
| 39 | adjust the detected level of ambient light based on the angular adjustment profile to produce an adjusted ambient light level | | | |
| 40 | and adjust a brightness of the backlight based on the adjusted ambient light level | | | |
| 41 | determine an angular adjustment profile based at least on the level of ambient light and a function of the angle of incidence value, wherein the angular adjustment profile defines adjustments to the detected ambient light level based upon the angle of incidence | | | |
| 42 | adjust the detected level of ambient light based on the angular adjustment profile to produce an adjusted ambient light level | | | |
| 43 | andadjust a brightness of the backlight based on the adjusted ambient light level | | | |
| 44 | The electronic device of claim 6, wherein the adjusted ambient light level is approximately equal to the detected level of ambient light multiplied by the cosine of the angle of incidence | | | |
| 45 | The electronic device of claim 6 | | | |
| 46 | wherein the adjusted ambient light level is approximately equal to or greater than the detected level of ambient light multiplied by the cosine of the angle of incidence and less than the detected level of ambient light when the angle of incidence is greater than or less than ninety degrees | | | |
| 47 | The electronic device of claim 6, comprising a user interface configured to receive a user input that selectively enables or disables adjustment of the detected level of ambient light based on the angle of incidence | | | |
| 48 | A method, comprising: detecting whether an angular adjustment function is selectively enabled via a user selection in a graphical user interface | | | |
| 49 | when the adjustment function is selectively enabled: detecting, via a display controller, an ambient light level for an ambient light source | | | |
| 50 | detecting, via the display controller, an angle of incidence value of the ambient light from the ambient light source | | | |
| 51 | determining, via the display controller, an angular adjustment profile for the detected ambient light level based on the detected angle of incidence value | | | |
| 52 | wherein the angular adjustment profile defines adjustments to the detected ambient light level based upon the angle of incidence | | | |
| 53 | and adjusting, via the display controller, a brightness of a backlight based on the angular adjustment profile | | | |
| 54 | detecting whether an angular adjustment function is selectively enabled via a user selection in a graphical user interface | | | |
| 55 | when the adjustment function is selectively enabled: detecting, via a display controller, an ambient light level for an ambient light source | | | |
| 56 | detecting, via the display controller, an angle of incidence value of the ambient light from the ambient light source | | | |
| 57 | determining, via the display controller, an angular adjustment profile for the detected ambient light level based on the detected angle of incidence value | | | |
| 58 | wherein the angular adjustment profile defines adjustments to the detected ambient light level based upon the angle of incidence | | | |
| 59 | and adjusting, via the display controller, a brightness of a backlight based on the angular adjustment profile | | | |
| 60 | detecting, via a display controller, an ambient light level for an ambient light source | | | |
| 61 | detecting, via the display controller, an angle of incidence value of the ambient light from the ambient light source | | | |
| 62 | determining, via the display controller, an angular adjustment profile for the detected ambient light level based on the detected angle of incidence value | | | |
| 63 | wherein the angular adjustment profile defines adjustments to the detected ambient light level based upon the angle of incidence | | | |
| 64 | andadjusting, via the display controller, a brightness of a backlight based on the angular adjustment profile | | | |
| 65 | The method of claim 10, wherein determining an angular adjustment comprises determining an adjusted ambient light level approximately equal to the detected ambient light level multiplied by the cosine of the detected angle of incidence | | | |
| 66 | The method of claim 10 | | | |
| 67 | wherein determining an angular adjustment comprises determining an adjusted ambient light level approximately equal to or greater than the detected ambient light level multiplied by the cosine of the detected angle of incidence and approximately less than the detected ambient light level when the angle of incidence is greater than or less than ninety degrees | | | |
| 68 | The method of claim 10 | | | |
| 69 | comprising adjusting the detected ambient light level by the angular adjustment to produce an adjusted ambient light level | | | |
| 70 | wherein adjusting a brightness of the backlight comprises determining a brightness level for the backlight that corresponds to the adjusted ambient light level | | | |
| 71 | The method of claim 10, wherein adjusting a brightness of the backlight comprises determining a brightness level for the backlight that corresponds to the detected ambient light level and applying the angular adjustment to the determined brightness level | | | |
| 72 | The method of claim 10, comprising verifying enablement of an angular adjustment for the backlight | | | |
| 73 | The method of claim 10, comprising: detecting multiple ambient light levels each corresponding to a different ambient light source: detecting multiple angles of incidence each corresponding to one of the different ambient light sources | | | |
| 74 | weighting the different ambient light sources based upon their corresponding detected ambient light levels and their corresponding detected angle of incidence | | | |
| 75 | and calculating an angular adjustment profile based upon the weighted different ambient light sources | | | |
| 76 | wherein the angular adjustment profile defines adjustments to the detected ambient light levels based upon the angles of incidence | | | |
| 77 | detecting multiple ambient light levels each corresponding to a different ambient light source:detecting multiple angles of incidence each corresponding to one of the different ambient light sources | | | |
| 78 | weighting the different ambient light sources based upon their corresponding detected ambient light levels and their corresponding detected angle of incidence | | | |
| 79 | andcalculating an angular adjustment profile based upon the weighted different ambient light sources | | | |
| 80 | wherein the angular adjustment profile defines adjustments to the detected ambient light levels based upon the angles of incidence | | | |
| 81 | Non-transitory computer-readable storage media comprising instructions for: determining an angular adjustment profile based at least on: a level of ambient light detected by a sensor and a function of a value of the angle of incidence of the ambient light detected by the sensor | | | |
| 82 | adjusting using the angular adjustment profile | | | |
| 83 | adjusting the detected ambient light level to produce an adjusted ambient light level that compensates for the angle of incidence of ambient light | | | |
| 84 | and adjusting a brightness of a backlight based on the adjusted ambient light level | | | |
| 85 | determining an angular adjustment profile based at least on: a level of ambient light detected by a sensor and a function of a value of the angle of incidence of the ambient light detected by the sensor | | | |
| 86 | a level of ambient light detected by a sensor anda function of a value of the angle of incidence of the ambient light detected by the sensor | | | |
| 87 | adjusting using the angular adjustment profile | | | |
| 88 | adjusting the detected ambient light level to produce an adjusted ambient light level that compensates for the angle of incidence of ambient light | | | |
| 89 | andadjusting a brightness of a backlight based on the adjusted ambient light level | | | |
| 90 | The non-transitory computer-readable storage media of claim 17, comprising instructions for determining the adjusted ambient light level to be approximately equal to the detected ambient light level multiplied by the cosine of the angle of incidence of ambient light | | | |
| 91 | The non-transitory computer-readable storage media of claim 17, comprising instructions for determining the angular adjustment profile by determining the cosine of the angle of incidence of ambient light | | | |
| 92 | An electronic device, comprising: a display comprising a backlight | | | |
| 93 | an ambient light sensor configured to detect an ambient light level for one or more ambient light sources | | | |
| 94 | and a display controller operably coupled to the ambient light sensor and the backlight and configured to: determine a particular angular adjustment profile for the backlight | | | |
| 95 | wherein the angular adjustment profiles specifies angular-based adjustments to the brightness based on the detected ambient light angle to simulate a reflectivity associated with a hard copy material | | | |
| 96 | and adjust a brightness of the backlight based on the detected ambient light level based upon the particular angular adjustment profile | | | |
| 97 | a display comprising a backlight | | | |
| 98 | an ambient light sensor configured to detect an ambient light level for one or more ambient light sources | | | |
| 99 | anda display controller operably coupled to the ambient light sensor and the backlight and configured to: determine a particular angular adjustment profile for the backlight | | | |
| 100 | wherein the angular adjustment profiles specifies angular-based adjustments to the brightness based on the detected ambient light angle to simulate a reflectivity associated with a hard copy material | | | |
| 101 | and adjust a brightness of the backlight based on the detected ambient light level based upon the particular angular adjustment profile | | | |
| 102 | determine a particular angular adjustment profile for the backlight, wherein the angular adjustment profiles specifies angular-based adjustments to the brightness based on the detected ambient light angle to simulate a reflectivity associated with a hard copy material | | | |
| 103 | andadjust a brightness of the backlight based on the detected ambient light level based upon the particular angular adjustment profile | | | |

| | | | | |
|---|---|---|---|---|
| 104 | The electronic device of claim 20, wherein the display controller is configured to determine the particular angular adjustment profile for the backlight from a selection of a particular hard copy material profile provided in a graphical user interface | | | |
| 105 | The electronic device of claim 20, wherein the particular hard copy material profile comprises a book profile and the particular angular adjustment profile specifies angular-based adjustments to simulate a reflectivity associated with a book | | | |
| 106 | The electronic device of claim 20, wherein the particular hard copy material profile comprises a newspaper profile and the particular angular adjustment profile specifies angular-based adjustments to simulate a reflectivity associated with a newspaper | | | |
| 107 | The electronic device of claim 20, wherein the display controller is configured to: detect whether an angular adjustment selection is selectively enabled | | | |
| 108 | and adjust a brightness of the backlight based on the detected ambient light level based upon the particular angular adjustment profile only when the angular adjustment setting is selectively enabled | | | |
| 109 | detect whether an angular adjustment selection is selectively enabled | | | |
| 110 | andadjust a brightness of the backlight based on the detected ambient light level based upon the particular angular adjustment profile only when the angular adjustment setting is selectively enabled | | | |

# 专利US9495915B1与该创新性描述的比对报告

| 序号 | 专利US9495915B1 | 技术特征相似度 | 序号 | 该创新性描述 |
|---|---|---|---|---|
| | 摘要 | | | |
| 1 | Techniques and apparatuses are disclosed to adjust an intensity of light emitted from front lights and/or to adjust a visual representation of content displayed by an electronic device based at least in part on a measurement of light intensity by a light sensor | | | |
| 2 | An electronic display may present a visual representation of objects including text and images, which may be subject to changes in size and contrast due to the measured levels of ambient light | | | |
| 3 | A display controller may also control activation and/or intensity of lights used to illuminate the electronic display based on the measurement of light intensity by the light sensor in addition to or separate from the adjustments to contrast and size of the content | | | |
| | 权利要求 | | | |
| 4 | A system comprising: one or more processors | | | |
| 5 | a light sensor to measure a light intensity of ambient light | | | |
| 6 | a temperature sensor to measure temperature | | | |
| 7 | a reflective light display to render a visual presentation of a content | | | |
| 8 | a front light assembly to emit light on a front side of the reflective light display, the front light assembly including a plurality of lights and light piping, the light piping to evenly disperse the light from the plurality of lights onto the front side of the reflective light display | | | |
| 9 | and memory to store instructions that, when executed on the one or more processors, are operable to: receive a user input associating a contrast level of a plurality of contrast levels to at least one predetermined ambient light intensity | | | |
| 10 | receive a light intensity value that is measured by the light sensor | | | |
| 11 | turn on and incrementally increase or incrementally decrease light output from a subset but not all of the plurality of lights to provide a substantially uniform light intensity over the reflective light display, the light output based at least in part on the light intensity value | | | |
| 12 | receive an ambient temperature value that is measured by the temperature sensor | | | |
| 13 | determine a waveform from a display profile based at least in part on the light intensity value, the ambient temperature value, and the user input, the waveform being configured to adjust a contrast of the content rendered on the reflective light display | | | |
| 14 | and adjust the contrast of the content rendered on the reflective light display using the waveform | | | |
| 15 | one or more processors | | | |
| 16 | a light sensor to measure a light intensity of ambient light | | | |
| 17 | a temperature sensor to measure temperature | | | |
| 18 | a reflective light display to render a visual presentation of a content | | | |
| 19 | a front light assembly to emit light on a front side of the reflective light display, the front light assembly including a plurality of lights and light piping, the light piping to evenly disperse the light from the plurality of lights onto the front side of the reflective light display | | | |
| 20 | andmemory to store instructions that, when executed on the one or more processors, are operable to: receive a user input associating a contrast level of a plurality of contrast levels to at least one predetermined ambient light intensity | | | |
| 21 | receive a light intensity value that is measured by the light sensor | | | |
| 22 | turn on and incrementally increase or incrementally decrease light output from a subset but not all of the plurality of lights to provide a substantially uniform light intensity over the reflective light display, the light output based at least in part on the light intensity value | | | |
| 23 | receive an ambient temperature value that is measured by the temperature sensor | | | |
| 24 | determine a waveform from a display profile based at least in part on the light intensity value, the ambient temperature value, and the user input, the waveform being configured to adjust a contrast of the content rendered on the reflective light display | | | |
| 25 | and adjust the contrast of the content rendered on the reflective light display using the waveform | | | |
| 26 | receive a user input associating a contrast level of a plurality of contrast levels to at least one predetermined ambient light intensity | | | |
| 27 | receive a light intensity value that is measured by the light sensor | | | |
| 28 | turn on and incrementally increase or incrementally decrease light output from a subset but not all of the plurality of lights to provide a substantially uniform light intensity over the reflective light display, the light output based at least in part on the light intensity value | | | |
| 29 | receive an ambient temperature value that is measured by the temperature sensor | | | |
| 30 | determine a waveform from a display profile based at least in part on the light intensity value, the ambient temperature value, and the user input, the waveform being configured to adjust a contrast of the content rendered on the reflective light display | | | |
| 31 | andadjust the contrast of the content rendered on the reflective light display using the waveform | | | |
| 32 | The system as recited in claim 1, wherein receiving the light intensity value that is measured by the light sensor occurs on a continual basis | | | |
| 33 | The system as recited in claim 1, wherein the reflective light display is an electronic ink display | | | |
| 34 | The system as recited in claim 1, wherein the front light assembly removably couples to the reflective light display | | | |
| 35 | The system as recited in claim 1, wherein: the reflective light display renders the visual presentation of the content using electronic ink | | | |
| 36 | and the waveform is implemented as a numerical value that is based at least in part on a viscosity of the electronic ink | | | |
| 37 | the reflective light display renders the visual presentation of the content using electronic ink | | | |
| 38 | andthe waveform is implemented as a numerical value that is based at least in part on a viscosity of the electronic ink | | | |
| 39 | The system as recited in claim 1, wherein the light intensity value is an average light intensity measured over a predetermined period of time | | | |
| 40 | The system as recited in claim 1, wherein the memory further stores instructions that, when executed on the one or more processors are operable to: receive an additional user input that associates an image size of a plurality of image sizes to the at least one predetermined ambient light intensity | | | |
| 41 | and adjust an image size of the content rendered on the reflective light display, based at least in part on the light intensity value and the additional user input | | | |
| 42 | receive an additional user input that associates an image size of a plurality of image sizes to the at least one predetermined ambient light intensity | | | |
| 43 | andadjust an image size of the content rendered on the reflective light display, based at least in part on the light intensity value and the additional user input | | | |
| 44 | An electronic device comprising: a light sensor to measure a light intensity of ambient light | | | |
| 45 | an electronic paper display configured to present a visual representation of a content by selectively moving particles through associated capsules | | | |
| 46 | a particle of the particles representing a pixel of the content and the associated capsules being aligned substantially perpendicular to a display surface of the electronic paper display | | | |
| 47 | a front light assembly to illuminate the electronic paper display, the front light assembly including a plurality of lights | | | |
| 48 | and a display controller in communication with at least the light sensor to: receive a light intensity value that is measured by the light sensor | | | |
| 49 | turn on and incrementally increase or incrementally decrease light output from a subset but not all of the plurality of lights to provide a substantially uniform light intensity over the display surface of the electronic paper display | | | |
| 50 | the light output based at least in part on the light intensity value | | | |
| 51 | determine a power consumption rate associated with a current use of the electronic device | | | |
| 52 | determine, based at least in part on the light intensity value that is measured by the light sensor, a waveform that controls movement of the particles to adjust a contrast of the visual representation of the content presented on the electronic paper display | | | |
| 53 | and adjust the contrast of the visual representation of the content presented on the electronic paper display using the waveform, and further based at least in part on the power consumption rate | | | |
| 54 | a light sensor to measure a light intensity of ambient light | | | |
| 55 | an electronic paper display configured to present a visual representation of a content by selectively moving particles through associated capsules | | | |
| 56 | a particle of the particles representing a pixel of the content and the associated capsules being aligned substantially perpendicular to a display surface of the electronic paper display | | | |
| 57 | a front light assembly to illuminate the electronic paper display, the front light assembly including a plurality of lights | | | |
| 58 | anda display controller in communication with at least the light sensor to: receive a light intensity value that is measured by the light sensor | | | |
| 59 | turn on and incrementally increase or incrementally decrease light output from a subset but not all of the plurality of lights to provide a substantially uniform light intensity over the display surface of the electronic paper display | | | |
| 60 | the light output based at least in part on the light intensity value | | | |
| 61 | determine a power consumption rate associated with a current use of the electronic device | | | |
| 62 | determine, based at least in part on the light intensity value that is measured by the light sensor, a waveform that controls movement of the particles to adjust a contrast of the visual representation of the content presented on the electronic paper display | | | |
| 63 | and adjust the contrast of the visual representation of the content presented on the electronic paper display using the waveform, and further based at least in part on the power consumption rate | | | |
| 64 | receive a light intensity value that is measured by the light sensor | | | |
| 65 | turn on and incrementally increase or incrementally decrease light output from a subset but not all of the plurality of lights to provide a substantially uniform light intensity over the display surface of the electronic paper display | | | |
| 66 | the light output based at least in part on the light intensity value | | | |
| 67 | determine a power consumption rate associated with a current use of the electronic device | | | |
| 68 | determine, based at least in part on the light intensity value that is measured by the light sensor, a waveform that controls movement of the particles to adjust a contrast of the visual representation of the content presented on the electronic paper display | | | |
| 69 | andadjust the contrast of the visual representation of the content presented on the electronic paper display using the waveform, and further based at least in part on the power consumption rate | | | |
| 70 | The electronic device as recited in claim 8, wherein the front light assembly comprises the plurality of lights surrounding light piping, the light piping located adjacent to an outward-facing side of the electronic paper display | | | |
| 71 | The electronic device as recited in claim 8, wherein the display controller adjusts an amount of light emitted by the front light assembly on a continual basis | | | |
| 72 | The electronic device as recited in claim 8, wherein the light sensor measures the light intensity of ambient light, partly in response to an expiration of a predetermined duration of time | | | |
| 73 | The electronic device as recited in claim 8 | | | |
| 74 | wherein the front light assembly is offset from the electronic paper display such that a location of the front light assembly is adjustable with respect to the electronic paper display and such that the front light assembly is positioned to disperse light emitted from the front light assembly to cover at least a portion but not all of the electronic paper display | | | |
| 75 | A method comprising: measuring a light intensity of ambient light that is proximate to a display device to determine a first light intensity value | | | |
| 76 | the display device including a front light assembly to illuminate a front side of a reflective light display | | | |
| 77 | the front light assembly comprising a plurality of lights and light piping | | | |
| 78 | the light piping to evenly disperse the light from the plurality of lights onto the front side of the reflective light display | | | |
| 79 | turning on and incrementally increasing or decreasing light output from a subset but not all of the plurality of lights to provide a substantially uniform light intensity over the reflective light display, the light output based at least in part on the first light intensity value | | | |
| 80 | receiving a user input associating a contrast level of a plurality of contrast levels to at least one predetermined ambient light intensity | | | |
| 81 | measuring the light intensity of ambient light proximate to the display device to determine a second light intensity value | | | |
| 82 | and adjusting a contrast of a content rendered on the display device, based at least in part on the second light intensity value and based at least in part on the user input | | | |
| 83 | measuring a light intensity of ambient light that is proximate to a display device to determine a first light intensity value | | | |
| 84 | the display device including a front light assembly to illuminate a front side of a reflective light display | | | |
| 85 | the front light assembly comprising a plurality of lights and light piping | | | |
| 86 | the light piping to evenly disperse the light from the plurality of lights onto the front side of the reflective light display | | | |
| 87 | turning on and incrementally increasing or decreasing light output from a subset but not all of the plurality of lights to provide a substantially uniform light intensity over the reflective light display, the light output based at least in part on the first light intensity value | | | |
| 88 | receiving a user input associating a contrast level of a plurality of contrast levels to at least one predetermined ambient light intensity | | | |
| 89 | measuring the light intensity of ambient light proximate to the display device to determine a second light intensity value | | | |
| 90 | andadjusting a contrast of a content rendered on the display device, based at least in part on the second light intensity value and based at least in part on the user input | | | |
| 91 | The method as recited in claim 13, further comprising adjusting an image size of an object in the content rendered on the display device based at least in part on the light intensity of ambient light and at least partly in response to the user input | | | |
| 92 | The method as recited in claim 13 | | | |
| 93 | wherein the adjusting the contrast of the content comprises decreasing the contrast of the content rendered on the display device in response to the light intensity of ambient light being more intense than a previous measurement of the light intensity of ambient light | | | |
| 94 | The method as recited in claim 13, further comprising, receiving a page turn request at the display device, wherein the page turn request is a signal generated in response to an additional user input | | | |
| 95 | and wherein adjusting the contrast of the content rendered on the display device is further based at least in part on the page turn request | | | |
| 96 | wherein adjusting the contrast of the content rendered on the display device is further based at least in part on the page turn request | | | |
| 97 | An apparatus comprising: a light sensor to measure a light intensity of ambient light | | | |

| | | | | |
|---|---|---|---|---|
| 98 | a temperature sensor to measure temperature | | | |
| 99 | a reflective light display to render a visual representation of a content | | | |
| 100 | a front light assembly to illuminate a front side of the reflective light display, the front light assembly including a plurality of lights | | | |
| 101 | and a display controller in communication with the light sensor to: receive a first light intensity value that is measured by the light sensor | | | |
| 102 | turn on and incrementally increase or incrementally decrease light output from a subset but not all of the plurality of lights to provide a substantially uniform light intensity over the reflective light display, the light output based at least in part on the first light intensity value | | | |
| 103 | determine a power consumption rate associated with a current use of the apparatus | | | |
| 104 | receive a request for a new page or a next page of the content | | | |
| 105 | based at least partly on the request, receive a second light intensity value that is measured by the light sensor | | | |
| 106 | receive an ambient temperature value that is measured by the temperature sensor | | | |
| 107 | and determine a waveform for a display profile based at least in part on the second light intensity value, the ambient temperature value, and the power consumption rate, the waveform being configured to adjust a contrast of the content rendered on the reflective light display | | | |
| 108 | a light sensor to measure a light intensity of ambient light | | | |
| 109 | a temperature sensor to measure temperature | | | |
| 110 | a reflective light display to render a visual representation of a content | | | |
| 111 | a front light assembly to illuminate a front side of the reflective light display, the front light assembly including a plurality of lights | | | |
| 112 | anda display controller in communication with the light sensor to: receive a first light intensity value that is measured by the light sensor | | | |
| 113 | turn on and incrementally increase or incrementally decrease light output from a subset but not all of the plurality of lights to provide a substantially uniform light intensity over the reflective light display, the light output based at least in part on the first light intensity value | | | |
| 114 | determine a power consumption rate associated with a current use of the apparatus | | | |
| 115 | receive a request for a new page or a next page of the content | | | |
| 116 | based at least partly on the request, receive a second light intensity value that is measured by the light sensor | | | |
| 117 | receive an ambient temperature value that is measured by the temperature sensor | | | |
| 118 | and determine a waveform for a display profile based at least in part on the second light intensity value, the ambient temperature value, and the power consumption rate, the waveform being configured to adjust a contrast of the content rendered on the reflective light display | | | |
| 119 | receive a first light intensity value that is measured by the light sensor | | | |
| 120 | turn on and incrementally increase or incrementally decrease light output from a subset but not all of the plurality of lights to provide a substantially uniform light intensity over the reflective light display, the light output based at least in part on the first light intensity value | | | |
| 121 | determine a power consumption rate associated with a current use of the apparatus | | | |
| 122 | receive a request for a new page or a next page of the content | | | |
| 123 | based at least partly on the request, receive a second light intensity value that is measured by the light sensor | | | |
| 124 | receive an ambient temperature value that is measured by the temperature sensor | | | |
| 125 | anddetermine a waveform for a display profile based at least in part on the second light intensity value, the ambient temperature value, and the power consumption rate, the waveform being configured to adjust a contrast of the content rendered on the reflective light display | | | |
| 126 | The apparatus as recited in claim 17, further comprising a lens to direct light emitted from the plurality of lights onto the front side of the reflective light display | | | |
| 127 | The apparatus as recited in claim 18 | | | |
| 128 | wherein the plurality of lights are located around at least a portion of a perimeter of the reflective light display | | | |
| 129 | and wherein the lens comprises light piping adjacent to the front side of the reflective light display | | | |
| 130 | the light piping to redirect light from the plurality of lights onto the reflective light display | | | |
| 131 | The apparatus of claim 17 | | | |
| 132 | wherein the display controller is further configured to: receive a user input that associates a particular size of non-textual portions of the content with a predetermined ambient light intensity value | | | |
| 133 | the particular size being different from an initial size of the non-textual portions of the content | | | |
| 134 | and adjust the initial size of the non-textual portions of the content, based at least in part on the second light intensity value and the user input | | | |
| 135 | receive a user input that associates a particular size of non-textual portions of the content with a predetermined ambient light intensity value, the particular size being different from an initial size of the non-textual portions of the content | | | |
| 136 | andadjust the initial size of the non-textual portions of the content, based at least in part on the second light intensity value and the user input | | | |

# 专利US20130100097A1与该创新性描述的比对报告

| 序号 | 专利US20130100097A1 | 技术特征相似度 | 序号 | 该创新性描述 |
|---|---|---|---|---|
| | 摘要 | | | |
| 1 | This disclosure provides systems, methods and apparatus, including computer programs encoded on computer storage media, for controlling lighting of a display based on ambient light conditions | | | |
| 2 | In one aspect, a display device can include a display and an auxiliary light source configured to provide supplemental light to the display | | | |
| 3 | The display device further can include a sensor system configured to measure a diffuse illuminance of ambient light from a wide range of directions and configured to measure a directed illuminance of the ambient light from a relatively narrow range of directions | | | |
| 4 | The display device further can include a controller configured to adjust the auxiliary light source to provide an amount of supplemental light to the display | | | |
| 5 | The amount of supplemental light can be based at least in part on the measured directed illuminance and the measured diffuse illuminance of the ambient light | | | |
| | 权利要求 | | | |
| 6 | A display device comprising: a display | | | |
| 7 | an auxiliary light source configured to provide supplemental light to the display | | | |
| 8 | a sensor system configured to measure: a diffuse illuminance of ambient light from a wide range of directions | | | |
| 9 | and a directed illuminance of the ambient light from a relatively narrow range of directions | | | |
| 10 | and a controller in communication with the sensor system | | | |
| 11 | the controller configured to adjust the auxiliary light source to provide an amount of supplemental light to the display | | | |
| 12 | the amount of supplemental light based at least in part on the measured directed illuminance and the measured diffuse illuminance of the ambient light | | | |
| 13 | a displayan auxiliary light source configured to provide supplemental light to the display | | | |
| 14 | a displaya sensor system configured to measure: a diffuse illuminance of ambient light from a wide range of directions | | | |
| 15 | a display and a directed illuminance of the ambient light from a relatively narrow range of directions | | | |
| 16 | a display and a diffuse illuminance of ambient light from a wide range of directions | | | |
| 17 | a display anda directed illuminance of the ambient light from a relatively narrow range of directions | | | |
| 18 | anda controller in communication with the sensor system | | | |
| 19 | the controller configured to adjust the auxiliary light source to provide an amount of supplemental light to the display | | | |
| 20 | the amount of supplemental light based at least in part on the measured directed illuminance and the measured diffuse illuminance of the ambient light | | | |
| 21 | The display device of claim 1, wherein the display includes a reflective display | | | |
| 22 | The display device of claim 2, wherein the reflective display includes interferometric modulators | | | |
| 23 | The display device of claim 1, wherein the sensor system includes at least one sensor configured to sense ambient light from at least two directions | | | |
| 24 | The display device of claim 4, wherein the at least one sensor includes a diffuse light sensor configured to measure the diffuse illuminance and a directed light sensor configured to measure the directed illuminance | | | |
| 25 | The display device of claim 4, wherein the at least one sensor includes a plurality of directed light sensors, each directed light sensor configured to measure illuminance of the ambient light received within a solid angle around a direction, the solid angle substantially less than 2π steradians 7 | | | |
| 26 | The display device of claim 1, wherein the controller is configured to adjust the auxiliary light source based at least in part on a ratio of the measured directed illuminance to the measured diffuse illuminance | | | |
| 27 | The display device of claim 1, wherein the controller is configured to adjust the auxiliary light source based at least in part on a sum of the measured directed illuminances and the measured diffuse illuminance | | | |
| 28 | The display device of claim 1, wherein the controller is configured to adjust the auxiliary light source based on a direction to a directed ambient light source | | | |
| 29 | The display device of claim 9, wherein the direction to the directed ambient light source is determined based at least in part on the directed illuminance and the diffuse illuminance measured by the sensor system | | | |
| 30 | The display device of claim 10, wherein the controller is configured to adjust the auxiliary light source based at least in part on a location of a viewer | | | |
| 31 | The display device of claim 1, further comprising: a processor that is configured to communicate with the display, the processor being configured to process image data | | | |
| 32 | and a memory device configured to communicate with the processor | | | |
| 33 | a processor that is configured to communicate with the display, the processor being configured to process image data | | | |
| 34 | anda memory device configured to communicate with the processor | | | |
| 35 | The display device of claim 12, further comprising: a driver circuit configured to send at least one signal to the display | | | |
| 36 | a driver circuit configured to send at least one signal to the display | | | |
| 37 | The display device of claim 13, further comprising: a driver controller configured to send at least a portion of the image data to the driver circuit | | | |
| 38 | a driver controller configured to send at least a portion of the image data to the driver circuit | | | |
| 39 | The display device of claim 12, further comprising: an image source module configured to send the image data to the processor | | | |
| 40 | an image source module configured to send the image data to the processor | | | |
| 41 | The display device of claim 15, wherein the image source module includes at least one of a receiver, transceiver, and transmitter | | | |
| 42 | The display device of claim 12, further comprising: an input device configured to receive input data and to communicate the input data to the processor | | | |
| 43 | an input device configured to receive input data and to communicate the input data to the processor | | | |
| 44 | A display device comprising: a display | | | |
| 45 | an auxiliary light source | | | |
| 46 | means for sensing ambient light, the means for sensing ambient light configured to measure a diffuse illuminance of the ambient light from a wide range of directions and configured to measure a directed illuminance of the ambient light from a relatively narrow range of directions | | | |
| 47 | and a controller in communication with the means for sensing ambient light, the controller configured to adjust the auxiliary light source based at least in part on the measured directed illuminance and the measured diffuse illuminance of the ambient light | | | |
| 48 | a displayan auxiliary light source | | | |
| 49 | a displaymeans for sensing ambient light, the means for sensing ambient light configured to measure a diffuse illuminance of the ambient light from a wide range of directions and configured to measure a directed illuminance of the ambient light from a relatively narrow range of directions | | | |
| 50 | a display anda controller in communication with the means for sensing ambient light, the controller configured to adjust the auxiliary light source based at least in part on the measured directed illuminance and the measured diffuse illuminance of the ambient light | | | |
| 51 | The display device of claim 18, wherein the display includes a reflective display | | | |
| 52 | The display device of claim 19, wherein the reflective display includes interferometric modulators | | | |
| 53 | The display device of claim 18, wherein the auxiliary light source includes a front-light | | | |
| 54 | The display device of claim 18, wherein the means for sensing ambient light includes at least one sensor configured to sense ambient light from at least two directions | | | |
| 55 | The display device of claim 22, wherein the at least one sensor includes a diffuse light sensor configured to measure the diffuse illuminance and a directed light sensor configured to measure the directed illuminance | | | |
| 56 | The display device of claim 22, wherein the at least one sensor includes a plurality of directed light sensors, each directed light sensor configured to measure illuminance of the ambient light received within a solid angle around a direction, the solid angle substantially less than 2π steradians | | | |
| 57 | The display device of claim 18, wherein the controller is configured to adjust the auxiliary light source based at least in part on a ratio of the measured directed illuminance to the measured diffuse illuminance | | | |
| 58 | The display device of claim 18, wherein the controller is configured to adjust the auxiliary light source based at least in part on a sum of the measured directed illuminances and the measured diffuse illuminance | | | |
| 59 | The display device of claim 18, wherein the controller is configured to adjust the auxiliary light source based on a direction to a directed ambient light source | | | |
| 60 | The display device of claim 27, wherein the controller is configured to adjust the auxiliary light source based on a location of a viewer | | | |
| 61 | A method of controlling lighting of a display of a display device | | | |
| 62 | the display device having an auxiliary light source configured to provide supplemental light to the display | | | |
| 63 | the display device having a diffuse light sensor and a directed light sensor | | | |
| 64 | the method comprising: measuring | | | |
| 65 | via the diffuse light sensor | | | |
| 66 | a diffuse illuminance of ambient light from a wide range of directions | | | |
| 67 | measuring, via the directed light sensor, a directed illuminance of the ambient light from a relatively narrow range of directions | | | |
| 68 | and adjusting, via execution of instructions by a hardware processor, the auxiliary light source based at least in part on the measured directed illuminance and the measured diffuse illuminance of the ambient light | | | |
| 69 | measuring, via the diffuse light sensor, a diffuse illuminance of ambient light from a wide range of directions | | | |
| 70 | measuring, via the directed light sensor, a directed illuminance of the ambient light from a relatively narrow range of directions | | | |
| 71 | andadjusting, via execution of instructions by a hardware processor, the auxiliary light source based at least in part on the measured directed illuminance and the measured diffuse illuminance of the ambient light | | | |
| 72 | The method of claim 29, wherein adjusting the auxiliary light source includes adjusting the auxiliary light source based at least in part on a ratio of the measured directed illuminance to the measured diffuse illuminance | | | |
| 73 | The method of claim 29, wherein adjusting the auxiliary light source includes adjusting the auxiliary light source based at least in part on a sum of the measured directed illuminances and the measured diffuse illuminance | | | |
| 74 | The method of claim 29, wherein adjusting the auxiliary light source is based on a direction to a directed ambient light source | | | |
| 75 | The method of claim 32, wherein adjusting the auxiliary light source is based on a location of a viewer | | | |
| 76 | A non-transitory tangible computer storage medium having stored thereon instructions for controlling lighting of a display of a display device | | | |
| 77 | the instructions when executed by a computing system | | | |
| 78 | the instructions causing the computing system to perform operations comprising: receiving from a computer-readable medium a measurement of a directed illuminance of ambient light from a relatively narrow range of directions | | | |
| 79 | receiving from a computer-readable medium a measurement of a diffuse illuminance of ambient light from a wide range of directions | | | |
| 80 | determining additional lighting conditions based at least in part on the measurement of the directed illuminance and the measurement of the diffuse illuminance of the ambient light | | | |
| 81 | and transmitting a lighting adjustment based at least in part on the additional lighting conditions to a light source configured to provide light to the display | | | |
| 82 | receiving from a computer-readable medium a measurement of a directed illuminance of ambient light from a relatively narrow range of directions | | | |
| 83 | receiving from a computer-readable medium a measurement of a diffuse illuminance of ambient light from a wide range of directions | | | |
| 84 | determining additional lighting conditions based at least in part on the measurement of the directed illuminance and the measurement of the diffuse illuminance of the ambient light | | | |
| 85 | andtransmitting a lighting adjustment based at least in part on the additional lighting conditions to a light source configured to provide light to the display | | | |
| 86 | The non-transitory tangible computer storage medium of claim 34, wherein receiving the diffuse illuminance of ambient light includes receiving a plurality of directed illuminances for different directions | | | |
| 87 | The non-transitory tangible computer storage medium of claim 34, wherein determining additional lighting conditions includes accessing a lookup table that correlates diffuse illuminance with a ratio of directed illuminance to the diffuse illuminance | | | |
| 88 | The non-transitory tangible computer storage medium of claim 34, wherein determining additional lighting conditions includes accessing a formula that correlates diffuse illuminance with a ratio of directed illuminance to the diffuse illuminance | | | |
| 89 | The non-transitory tangible computer storage medium of claim 34, wherein determining additional lighting conditions includes accessing a formula that is based at least in part on a sum of the measured directed illuminances and the measured diffuse illuminance | | | |

# 专利US20140104436A1与该创新性描述的比对报告

| 序号 | 专利US20140104436A1 | 技术特征相似度 | 序号 | 该创新性描述 |
|---|---|---|---|---|
| | 摘要 | | | |
| 1 | A display device to measure ambient light brightness may include a camera to provide an image | | | |
| 2 | a controller to detect a face from the image and to measure brightness from a ratio of the iris diameter to the pupil diameter DI/DP | | | |
| 3 | and an actuator to stepwise change the backlighting of the display device based upon the measured brightness | | | |
| | 权利要求 | | | |
| 4 | ) (canceled) 5) A display device to measure ambient light brightness, comprising: a camera to provide an image | | | |
| 5 | a controller to measure brightness from a ratio of the iris diameter to the pupil diameter DI/DP | | | |
| 6 | a camera to provide an image | | | |
| 7 | a controller to measure brightness from a ratio of the iris diameter to the pupil diameter DI/DP | | | |
| 8 | 6) A display device to measure ambient light brightness as in claim 5, wherein the controller turns off the display device if a face is not detected | | | |
| 9 | 7) A display device to measure ambient light brightness as in claim 5, wherein the measured brightness is compared with respect to a predetermined brightness | | | |
| 10 | 8) A display device to measure ambient light brightness as in claim 5, wherein the display device includes an actuator to stepwise change the backlighting of the display device based upon the measured brightness | | | |
| 11 | 9) A display device to measure ambient light brightness as in claim 8, wherein the actuator changes the backlighting of the display device if the measured brightness is more than two increments from the predetermined brightness | | | |
| 12 | 10) A display device to measure ambient light brightness as in claim 5, wherein the controller detects a face from the image | | | |
| 13 | 11) A display device to measure ambient light brightness as in claim 5, wherein the display device includes an infrared light emitting diode light source and the camera is sensitive to the infrared light emitting diode light | | | |
| 14 | 12) A display device to measure ambient light brightness as in claim 5, wherein the display device includes a ambient light sensor | | | |
| 15 | 13) A display device to measure ambient light brightness as in claim 12, wherein the controller compares the brightness from the ambient light sensor and the brightness based upon the pupil diameter to determine if the pupil of the user is responsive to light | | | |
| 16 | 14) A display device to measure ambient light brightness as in claim 13, wherein the controller activates the display device to transmit a signal when the comparison between the brightness from the ambient light sensor and the brightness based upon the pupil diameter exceeds a predetermined level | | | |